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Vol. XXV AUGUST 1931 No. 8

The EXCAVATING ENGINEER

IN THIS ISSUE:

Gold Successfully Recovered from Gossan Ore

Dragline Used to Pull Stumps

Constructing the Subway Under Queens Boulevard

Specializing in High Grade Products Proves Profitable

Monks-Ulen Operates Large Draglines in Greece

Front Cover Illustration: Snow capped Kirkini Mountains in Northern Greece look down where Monks-Ulen and Company dig to protect this fertile valley against recurrent floods. See Page 393.

1/2-
yard
5/8
3/4
7/8
1
1-1/4
1-1/2
1-3/4
2
2-1/4
2-1/2
3
3-1/2
4
4-1/2
5 and
up to
16
yards

hovels

Drag-
lines

Clam-
shells

lifting
ranes

Drag-
hovels

agnet
ranes

unnel
hovels

edges

Drag-
line
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Gaso-
line

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Gas
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Vol. 25 — AUGUST, 1931 — No. 8

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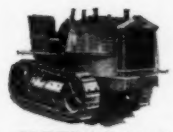

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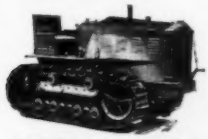

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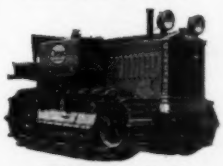

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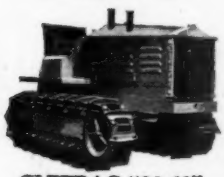

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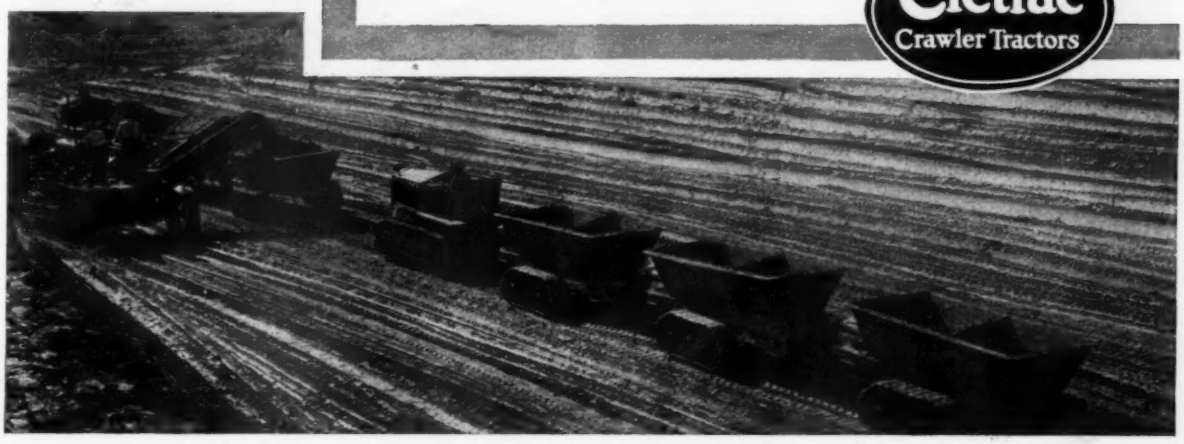

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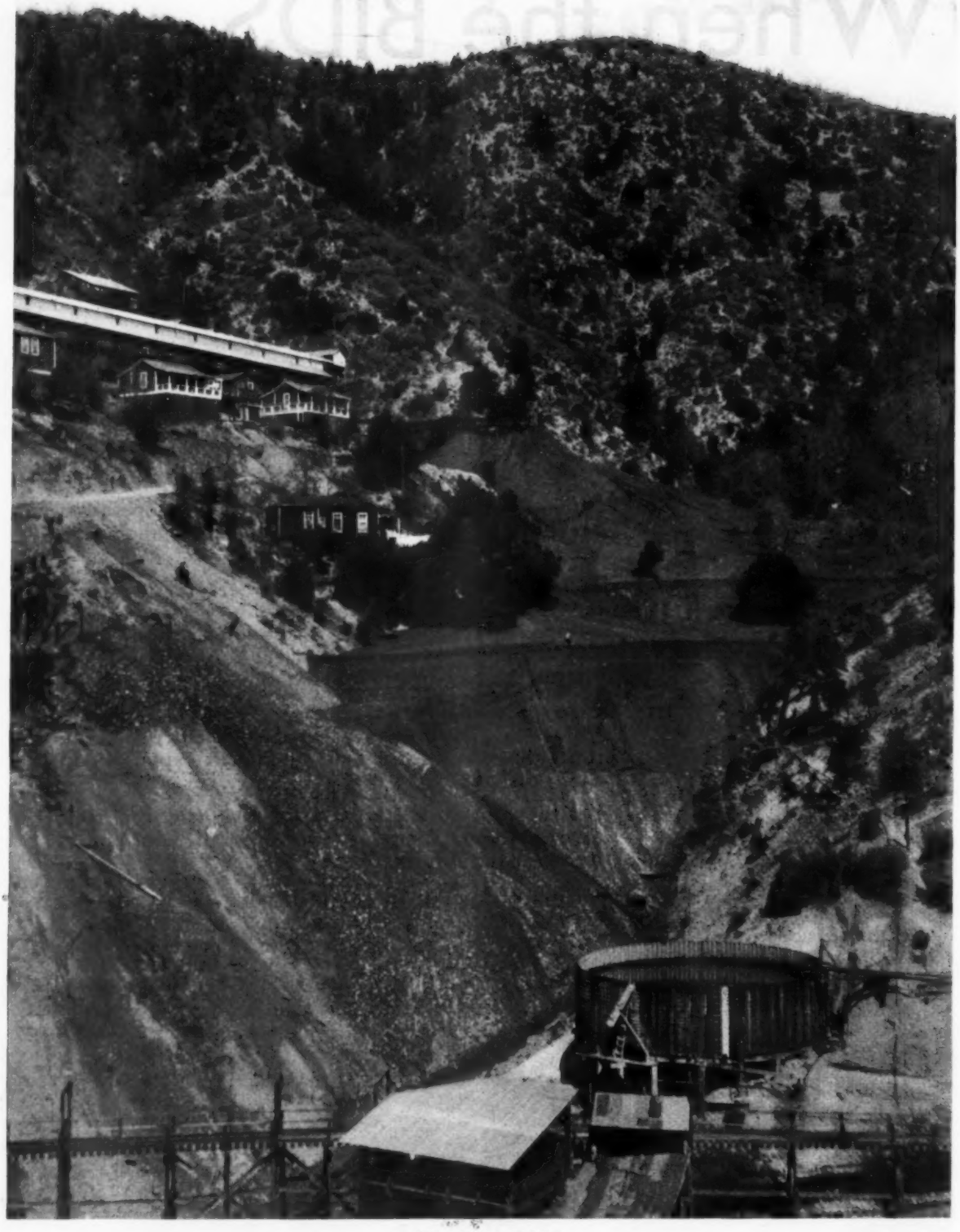


"Hog Town Gulch"

This view shows the tailing dump below the cyanide plant as it appeared on March 21st, 1931. The toe of the dump consists of coarse waste for a limited distance, but above that the accumulation is retained by a sort of dam built of the tailings themselves.

The EXCAVATING ENGINEER

Vol. XXV AUGUST 1931 No. 8

General view of the Iron Mountain mine.

GOLD successfully recovered from Gossan Ore

The Mountain Copper Company, Ltd., achieve remarkable low costs in mining and milling ore at Matheson, California

By CHAS. VOLNEY AVERILL
District Mining Engineer, State of California

THE NEW cyanide plant of The Mountain Copper Company at Matheson, California, is very interesting, not only because it is treating a gossan ore, which hitherto has been considered not amenable to this process, but also because the ore is being handled at a lower cost than any other, so far as the writer knows, with the single exception of the Alaska Juneau. Roughly, the cost of mining and milling is $0.85 per ton in a plant that is handling 550 tons per day.

The property is one of the oldest of the Shasta County Copper Belt. It was discovered in the early sixties, and The Mountain Copper Company, Ltd., of London, England, purchased it on January 1, 1897. This company, at one time one of the largest copper producers of the world, has a flotation plant for silicious copper ores, a smelter at Martinez, and the Hornet mine—a producer of pyrite, in addition to the cyanide plant at Iron Mountain.

The location of the mine under discussion is 17 miles northwest of Redding. A railroad station on the main north-south line of the Southern Pacific at Matheson serves the property. Wm. F. Kett is General Manager with headquarters in San Francisco. At the mine M. J. Murphy is General Superintendent, and J. M. Basham is Mill Superintendent. The writer is indebted to these officials for the information on which this article is based.

NOTE: Adapted from Mr. Averill's article in the 27th Report of the State of California Mineralogist which will appear shortly.

The ore now being treated is a typical reddish brown gossan, largely porous oxides of iron remaining from the leaching by surface waters of a body of iron and copper sulphides. The weight is about 100 pounds per cubic foot. About 0.4% copper remains in it; and there is a small content of mercury, which appears in the precipitates—also a little arsenic. Early reports by metallurgists were to the effect that cyanide consumption would be too great on this material to make its treatment profitable. A batch of samples sent out in 1928,

Superintendent Murphy showing Visitor Weeks the mine operation.

however, brought returns showing good extraction without excessive cyanide consumption. This led to further work on the gossan.

Deposit contains 555,000 tons gossan

Extensive samples taken from 50-foot squares on the surface gave returns of $2.40 per ton in gold. From diamond drill holes, the average for the bottom of the gossan, near the top of the copper ore, was found to be $1.60 per ton. For intermediate points, diamond drilling was unsatisfactory, because the soft gossan did not give a core. An average of samples taken on the surface and those at the bottom of the gossan, supplemented by samples taken from underground workings in the gossan, indicated that the deposit would yield 365,000 tons running $2.00 per ton and 190,000 tons running $1.40 to $1.50 per ton, the average for the mass being $1.85 per ton. No gold coarse enough to detect in a pan has ever been found in the gossan.

A four-ton plant was built; and 17 test runs were made. Gossan was crushed to 2-mesh, the resulting material having 10 to 15% of fines of minus 100-mesh. These tests indicated that on material of a maximum size of 2-mesh, a $0.40 tailing was to be expected. With a head of $1.60, this meant a recovery of 75%; heads, $2.00; recovery 80%; and heads $3.00, recovery 87%. In addition to determining the feasibility of cyaniding the gossan, these tests indicated three important details of treatment.

1. No advantage was to be gained by using very large amounts of lime.
2. Moistening the leaching tank charges and spreading them in layers would reduce channelling.*
3. Putting the first solution on from the bottom of the tank would also reduce channelling.

Stripping by electric shovel

At present mining is being done in an open quarry with a Bucyrus-Erie ¾-cubic-yard electric shovel with caterpillar type mounting. The quarry now has an 85-foot face; but this will soon be reduced to 50 foot or less by building an incline of waste rock and running the shovel up to a higher bench. Depth of gossan below the floor of the quarry is about 30 feet. Ore is loaded on Mack trucks, which haul 8 tons to a load. The haul is 2200 feet; and three trucks and three drivers are required. The reason for locating the mill at this distance from the mine was to get space for storage of tailings. The trucks handle enough ore for a day's run of the mill in six hours, leaving two hours out of each shift for handling waste material. Work in the pit is handled by three quarry men and one shovel man. Blasting powder averages 4000 pounds of 20% gelatine per month for 16,000 tons of ore; but this is greater when much overburden is handled.

Ore crushed and screened

From the trucks the gossan is dumped on an inclined grizzley of steel rails. Oversize runs to a horizontal section of the grizzley, where it is broken by hand with sledges to pass the 8 and 9-inch openings. To hold down these horizontal rails, sections of old ball mill liner have been bolted over the ends, and have given good service on this section where the large chunks are broken. From the grizzley the gossan drops to a storage bunker with a capacity of 350 tons which can be drawn from the chutes. The bunker discharges through three chutes with horizontal rack and pinion gates to a pan conveyor 42 inches wide and 50 feet long, set close under the lips of the chutes. The motion of the

* NOTE: Channelling is the tendency of the solution to flow in channels through the ore charge instead of in an even distribution.

Bucyrus-Erie 1030 electric shovel loading one of the Mack trucks with gossan ore to be hauled to the plant.

General view of cyanide plant at Iron Mountain mine where gold is successfully extracted from gossan ore. The crushing plant is the highest building at the right of the picture.

conveyor, with the chute gates properly set, controls the flow of ore; and the man at the crusher can regulate the feed by starting or stopping the pan conveyor. This discharges onto an inclined grizzley with 2-inch openings; and oversize is crushed in a 10 by 20-inch Buchanan jaw crusher. Ore then goes to 40 by 15-inch Allis-Chalmers Anaconda rolls. This completed the equipment in the original installation; but results indicated desirability of finer crushing; and a Link-Belt vibrating screen with 20 by 12-inch rollers for screen oversize were added. All of the gossan must pass through the vibrating screen with openings of ½ inch. A crimped wire screen with ½-inch square openings was used at first; but at present a Tyler Tryrod screen is in use. Openings between wires in this are in the form of a slot, ½ inch by about 4 inches. If any trouble is had with moist fines clogging the screen, the feed is stopped for a moment; and the vibration of the wires soon clears it. Screened ore is picked up by the main conveyor belt, over which a dry lime feeder is placed. Crusher jaws of manganese steel show no wear from the 135,000 tons that have gone through the plant; and the rolls show very little wear.

Leaching tanks charged from conveyor

Leaching vats are cylindrical wood-stave tanks, 25 feet 8 inch inside diameter and with 12-foot staves. There are ten of them arranged in units of five each, one unit handled by the day shift, the other by the night shift. For charging, a belt conveyor with tandem drive and automatic tripper runs over the row of tanks. The tripper is run back and forth over the tank to be charged; and a man in the tank spreads the gossan in 18-inch layers. Deflecting chutes from the tripper aid in this spreading. The tanks are filled within 3 inches of the top and the ore settles 6 inches additional as the leaching solution comes on. The strong leaching solution is started in from the bottom of the tank when it is half full of ore. The roof over the conveyor covers about two-thirds of the tank; and for rainy weather canvas curtains are provided to cover the balance and keep the men dry.

Of the five tanks in a unit, one is always being filled with ore, a second is discharging tailings, in a third the ore is being leached with strong solution, in a fourth with weak solution, and in a fifth the tailings are being washed.

Filter bottoms of the leaching tanks consist of coconut matting covered with 10-ounce canvas and 2 by 2-inch cleats, 6 inches apart. These bottoms are washed and cleaned once every six weeks by hosing with water. The first strong solution is put on the charge from the bottom of the tank; all others from the top. Each unit of five leaching tanks is supplied with three sump tanks 8 feet in diameter by 6 feet high; and each of these is equipped with a 2-inch Krogh pump. The four main solution tanks, strong, weak, gold, and barren, are 25 feet 8 inches in diameter by 12 feet high; and are set on higher ground than the leaching vats. The gold solution tank has a filter bottom covered with two feet of coarse sand. No trouble has yet been experienced from cloudy or dirty solutions even from the leaching tanks. Main solution lines are 2½ and 3-inch. Strong solution is kept below one pound of cyanide per ton to avoid dissolving the copper in the gossan. If allowed to dissolve, this copper is troublesome during the melt, getting into the slag and bullion.

Tailings discharged to conveyors

Four adjustable holes, with maximum opening 16 inches square, spaced between the sides of the tanks and the center are provided for discharging tailings. Two conveyor belts run under these, discharging to a cross-belt, which stacks the tailings. Water is used at this stack to spread the tailings in the impounding basins. Three men discharge a

276-ton tank and clean the bottom ready for the next charge in an 8-hour shift.

The latest standard Merrill-Crowe vacuum process is used to precipitate the gold from solution. Dried precipitate is melted in a No. 150 crucible tilting furnace, burning distillate. Bullion is first poured into a conical mold; and is then remelted in the same crucible for pouring the brick of 1000 ounces. The fineness of the bullion averages about 460 parts per 1000 in gold and 185 in silver.

Slag from the melt is ground in a 24 by 24-inch ball mill, and fed to a Deister concentrating table, from which three products are taken. Middlings are reground; and the fines are put over a "mat-o-gold" rocker. This treatment results in the recovery of $125 in gold shot per cleanup. Slag tailings, assaying $130 per ton, are shipped to the smelter.

March production $21,689.71

In March 1931 the plant treated 16,847 tons of ore; an average of 543.4 tons per day. The average heads, gold, were $1.654 and tails $0.452 indicating an extraction of 72.8%. Tons of solution precipitated were 11,060 to value of $21,689.71.

While the plant is returning a very satisfactory profit at present, the operators consider it still in the experimental stage, and are conducting tests to improve the process. A change that will probably be made shortly is to reduce the size of the openings in the screen in the crushing department. That the greater part of the loss in the tailings is in the large sizes is indicated in tests.

In treating 16,847 tons in March, the mill used 69,828 horsepower hours, and the quarry 8,500. Water is brought in by gravity during the winter; but in the summer must be pumped from the creek below against a head of 1,300 feet.

Shovel loading costs 8 cents per ton

The original plant consisting of crushing equipment and one unit of five leaching tanks cost $48,000. Recent additions to double the capacity and put the plant in its present condition cost $27,000, and quarry equipment about $25,000, bringing the total to $100,000. The average per ton costs for March 1931 which are fairly representative, were as follows: per ton delivered to the plant from the quarry $0.385 on a total of 16,834 tons. Costs at the cyanide plant total $0.432 per ton, giving a total cost of $0.817 per ton. No general administration expenses or depreciation on plant are included in above figures. Trucks are charged out at the rate of $3 per hour including driver, and the shovel at 8 cents per ton. This charge on the shovel includes complete depreciation in five years.

Dragline Used To Pull Stumps

PULLING stumps with a dragline is by no means a new idea as many experienced drainage and levee contractors have had occasion to use this method of removing stumps at one time or other. In many cases it is impractical to tie up a dragline on stump pulling because the machine can make more money doing something else. However, where a dragline is available it will be found a handy tool to take care of the stumping. On the C. R. Cummins, Inc., levee job near Eldred, Illinois on the Illinois River there were no muck ditches to dig in the early part of the contract as the first work called for enlargement of existing levees. This left their Bucyrus-Erie 20-B Diesel dragline available for other work and so General Superintendent Roy Hatfield put the ¾ yard Diesel at yanking out stumps.

Instead of using the ordinary single line pull of the drag rope, this rope was reeved through a padlock sheave and then dead ended to the revolving frame, thereby doubling the horizontal pull. The hoist rope was then connected to the U-bolt on the end of this block as shown in the illustration. By changing the angle of the pull with the hoist line during the operation even the most stubborn rooted stumps encountered were easily moved. The size of some of these stumps pulled by this ¾ machine was really remarkable.

As soon as the job gets into the setback work where muck ditches are required the 20-B will dig the ditches in addition to continuing on the job of stump pulling.

CONSTRUCTING the Subway Under Queens Boulevard

Slattery & Daino Company excavate 750,000 yards in mile of subway that will open up new residential & business section in N. Y. City.

Two Bucyrus-Erie steamers drive piles, two others excavate behind them

ON September 25th, 1930, Slattery & Daino Company began operations on their contract for the Queens Boulevard subway, amounting to $5,625,000.00. The work will be completed within two years. The job is for the City of New York Subway System and opens up a new residential and business section by providing it with rapid transportation.

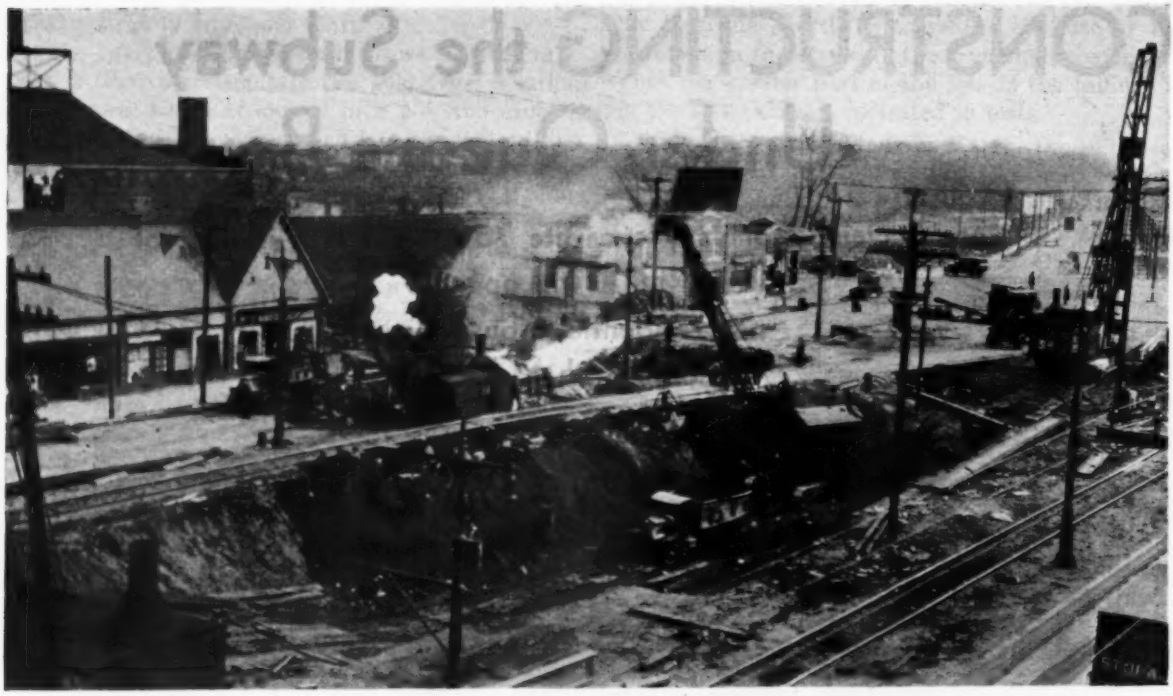
Experienced subway builders are Contractors Slattery and Daino (their contract for a section under the Grand Concourse in the Bronx amounting to $5,320,000.00 is now practically completed and a tunnel section on Broadway amounting to $1,400,000.00 was completed three years ago.) So the Queens Boulevard job got under smoothly and progress has been rapid. Mr. Slattery and Mr. Daino are both active on the work; J. E. Riches is General Superintendent and James Carroll, Master Mechanic.

Material is hauled out by trucks up this ramp.

Maximum depth 66 feet

The subway is a double-deck subway, four tracks on lower level and four tracks on upper level; the size varies in depth from 32 to 66 feet and in width from 64 to 100 feet. In all there is about 750,000 cubic yards of excavation in the mile under contract. The material is largely sand and gravel with numerous boulders.

The cut and cover method of excavation is used. 24-inch I-beams are driven along both sides of the subway as piles on about 6-foot centers. Driving these I-beams is accomplished with two Bucyrus-Erie 31-B steamers with crane booms and rigged with McKiernan-Terry steam hammers with 70-foot leads. With the I-beams driven down 5 feet below sub-grade two Bucyrus-Erie 41-B shovels excavate between these rows of beams, loading into motor trucks which haul out up a ramp to the



Getting started with the excavation. Piledrivers at right and left are driving I-beams. Shovel and clamshell are starting excavation loading to Mack trucks.

surface. As the I-beams become exposed short lengths of horizontal planks are dropped in between the flanges of the beams to act as shoring for the banks on either side.

The haul for the motor trucks varies from a few hundred yards to a half mile. Excavated material is used to fill in City-owned swamp land adjoining the subway on which the subway storage and repair yards are to be located.

The section through which this subway is being built is comparatively new with a wide three-roadway boulevard and with only a few two-story taxpayers. It was only necessary to wreck five small brick buildings to accommodate the yard lead tracks, and the construction problems have not been unusually difficult.

Excavate 51,000 cubic yards per month with two machines

The two Bucyrus-Erie 41-B shovels handling the digging have maintained an average monthly yardage of 51,000 cubic yards working one shift of eight hours. Checking the machines with a stopwatch shows the average complete cycle for the

(Continued on Page 389)

At the left is shown the ramp and dump on swampland where the subway storage and repair yard will be located. In the center we see General Superintendent, J. E. Riches and Master Mechanic, Jas. Carroll. At the right a Bucyrus-Erie pile driver with McKiernan-Terry steam hammer is driving the first I-beams along the side wall of the new subway.

Mine entrances. Trucks haul from the shovels, eliminating track expense underground.

Specializing in High Grade Products Proves Profitable

Stewart Sand & Material Company uses Underground Quarry Methods to Secure a Better and Cleaner Grade of Limestone at Pixley Plant.

FORTY YEARS of progressive service in furnishing building materials to contractors and builders of Greater Kansas City is the record of the Stewart Sand and Material Company. When the business was started the only material handled was sand from the Missouri River. Later, as the city grew, sand plants were located on the Kaw River, and Kaw River sand became a product of the Company. Sand, in its raw or natural state, leaves room for much improvement to make it acceptable as a high grade building material. Therefore, to improve its product, the Stewart Sand Company spent large sums in the development of special machinery for the removal of silt, lignite, mud, etc., until at the present time Stewart's Classified Sand meets the requirements of the most rigid specifications. In addition to being clean and uniform, Classified Sand is also properly graded for a particular use. As a result they produce separate and distinct sands for concrete, plaster, brick, mortar, asphalt pavement, iron moulding, roofing, water filters, locomotives and street cars.

General view of plant showing the Macks dumping their 9-ton loads into the concrete hopper that feeds the crusher.

The next advance in meeting the needs of the builders of Kansas City was the establishment of a modern plant for the preparation and mixing of plaster, brick mortar, lime putty, stucco, etc. With this added facility the opportunity was given to contractors and builders to realize substantial savings in their construction costs and be assured of getting the highest quality materials properly prepared.

Following this step, the next enlargement of Stewart's service to builders was the consolidation with the Coen Building Material Company, forming the Stewart Sand and Material Company with five yards in Greater Kansas City. The list of materials handled was thus enlarged to include sand, portland cement, plaster, lime, metal lath, building tile, common and face brick, steel framing for dwellings and many other standard and specialty items.

Finally, the addition of substantially all of the properties of the Consumers Material Corporation has provided facilities for the furnishing of 7,500

tons of crushed stone daily to Greater Kansas City and surrounding territory. Extensive improvements have been made at the various crushed stone plants which enable the Stewart Company to furnish crushed limestone and limestone products for carload shipments and truck delivery.

Open Quarry Changed to Underground

The Stewart Sand and Material Company's Pixley plant, located at Pixley, Missouri, about thirteen miles east of Kansas City on the Missouri Pacific Railroad, was originally operated as an open quarry by W. M. Spencer, and for many years the stripping

Caterpillar with bulldozer is used for cleaning up the mine floor.

was handled by a long boom dragline and the quarry stone loaded by a large railroad type shovel.

The open quarry methods could not produce stone sufficiently clean and free from shale and mud balls to meet specifications during recent years. About five years ago, when starting in mining, the only suitable rock was what is known as the Bethany Falls Limestone. This is a ledge of rock 21 feet thick with several additional feet of poorly cemented limestone above, which is not suitable for roof as it slacks and falls when moisture strikes it, so it is necessary to leave about four feet good rock to make a safe roof which can be recovered when withdrawing.

At the present time the mine is operated with rooms 33 feet wide and pillars 25 feet in diameter, worked to a height of 17 feet. Drilling is done by Denver Eleven and Chicago Pneumatic Ten jack hammers, mounted on a board. This method of handling is preferable to post drilling due to operating conditions. 7/8 drill steel is used. Blasting is done by an equivalent of 40% ammonia dynamite.

Loading is done with three Bucyrus-Erie 1-yard tunnel shovels which load into Mack trucks averaging about 9 tons per truck. The shovels were originally purchased for subway construction in New York City; about two years ago they were purchased second-hand from the former owner for use in this mine. At the present time only two of these shovels and four Mack trucks are used to deliver rock to the mill. The third shovel is used mostly for handling material stored in the mine.

A Caterpillar 30 tractor, with a bull-dozer attached, is used for pushing the scattered rock from blasting back to the headings so the shovel can dig it economically. A home-made road drag, made of 60-pound railroad rails, is pulled by the caterpillar in the grading and maintaining the roads. Ventilation in the mine is provided by well drill holes, drilled from the surface, about 100-foot centers. This drilling is done by one Sanderson-Cyclone drill equipped with an 8-inch bit. Five portable blowers are used to pump air down in the mine to prevent fouling of the air by the trucks. So far this method has proved very satisfactory.

One of the Bucyrus-Erie tunnel shovels used to excavate the stone.

Feeding the No. 8 Austin crusher through the 72-inch Ross chain feeder.

The mine foreman is Herman McDowell, and the shovel operators are Joseph Lindsay, Lee Bryant and Hazel McClain.

Plant Capacity 200 tons an hour

The mined stone is transported by truck to the concrete hopper located ahead of a No. 8 Austin crusher. This hopper holds about 100 tons. Stone is fed from the hopper to the No. 8 Austin by means of a 72-inch Ross chain feeder which secures a very uniform flow of material through the crusher, greatly improving the screen efficiency. The product of the No. 8 crusher is taken by a 30-inch belt conveyor to a 4-foot by 8-foot Robins gyrex scalping screen. The oversize from this screen goes to two secondary crushers—one a No. 6 McCully and one a No. 6 Austin. The product of these secondary crushers is taken by a 30-inch belt conveyor which empties onto the 30-inch belt from the primary crusher, making a closed circuit for all oversize material. The throughs from the Robins Gyrex scalper are taken by a 24-inch belt to the screen room where the stream is split and goes to two double-deck 4 by 8 Allis-Chalmers screens; the top deck of one is set for 1½-inch material, and the bottom deck for 1-inch, each going to a separate bin. The throughs from these two screens go to two double-deck Robins gyrex 42 inch by 72 inch which have ⅝ on the top deck and 5/16 on the bottom deck; both materials go to separate bins. Two 24-inch parallel conveyors carry throughs from these two gyrex screens to two 42-inch by 48-inch Robins vibrex where the dust is screened out. The material from these separate bins is drawn out through variable feeders and mixed in the necessary proportions on a 36-inch belt conveyor, going to a final screening over a 42-inch by 96-inch Robins gyrex. From this screen it is either loaded out in railroad cars or trucks.

Plant operations at Pixley are in charge of Superintendent H. T. Jackson, and Assistant Superintendent P. J. Mack.

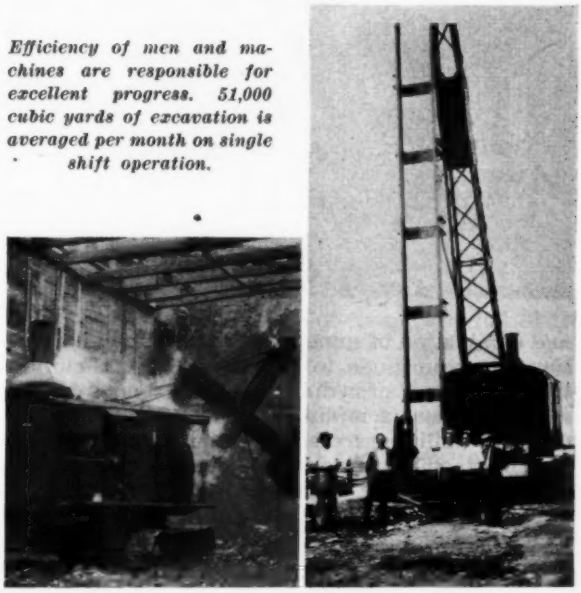
Officials of the Stewart Sand and Material Company are: John Prince, President; G. W. Garrette, Treasurer; Geo. H. Cook, General Superintendent Sand Plants; and W. B. Carswell, General Superintendent Rock Plants.

When things go wrong, as they sometimes will
When the road you're digging seems all uphill—
When your work is low,—and your bid is high,
When you want to smile, but you have to sigh
When care is pressing you down a bit,—
Rest if you must,—but **Don't You Quit!** H. L. J.

Constructing the Queens Boulevard Subway

(Continued from page 386)

Efficiency of men and machines are responsible for excellent progress. 51,000 cubic yards of excavation is averaged per month on single shift operation.



digging operation to be 0.44 minutes. Slattery and Daino report that these machines have shown a performance entirely satisfactory.

The operators on the shovels are the father, Joe Popless on one shovel and his son, Harold Popless on the other shovel. Both of these operators worked on the same shovels on the Concourse job where they removed 405,000 cubic yards of earth and rock before starting this present work.

An old lady in church was seen to bow her head whenever the name of Satan was mentioned. One day the minister met her and asked her why she did it.

"Well," she replied, "politeness costs nothing and—you never know!"

EQUIPMENT YOU OUGHT TO KNOW ABOUT

New 1-Yard Readily Convertible Shovel

THE NEW 32-B, 1-yard Bucyrus-Erie convertible shovel-dragline-crane-clamshell, is modern in every respect. Its many features, making a list unparalleled for a machine of this size, contribute to its ability to meet present day competition in the dirt moving industry. Bucyrus-Erie's well known reputation for dependability is sustained by ruggedness throughout the new machine; weight, however, is held down to a minimum by simplicity

and elimination of unnecessary bulk. Special attention has been given to balancing the various motions, hoisting, crowding, swinging and dumping so as to secure a minimum time for the complete cycle. Stability, accessibility, quick convertibility and most efficient transmission of power to give maximum digging force at the dipper teeth are features of this machine, which has the skill and experience of the world's oldest and largest manufacturer behind it.

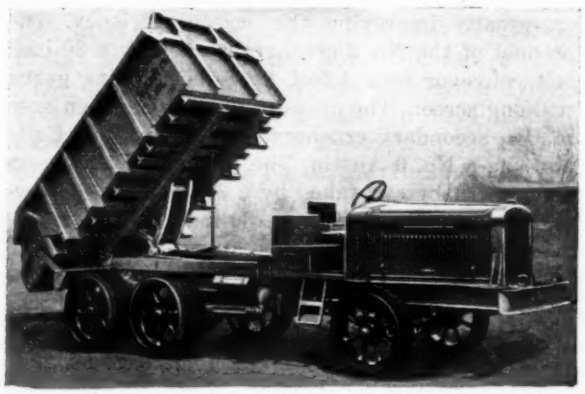
Outstanding items of interest include choice of gasoline, Diesel or electric power, either rope or chain crowd on shovel, special extra long and wide mountings for soft ground dragline work. All continuously running shafts are mounted on ball bearings. Engine transmission gears are fully enclosed and run in oil as are the boom-hoist worm and gear and the reversing transmission gears for swinging and propelling. So that there will be no binding of bearings there are only two bearings to a shaft. The transmission gears are silent with generated teeth, machine-cut from solid steel. There is an outside band power-take-off clutch and positive power dipper trip. The machine has a box girder boom and outside handles, single-shaft drive caterpillar mounting and an inserted tooth dipper. For further details write *Bucyrus-Erie Company, South Milwaukee, Wisconsin,* mentioning *The Excavating Engineer.*

New Hug for Quarry Field

A NEW heavy duty truck known as the Model 99 Hug Road-builder and designed especially to meet the extremely severe conditions of operation in the quarry field, is announced by *The Hug Company of Highland, Illinois.* This new model truck has a maximum pay load capacity of 30,000 pounds. An outstanding and exclusive Hug feature embodied in this truck is the set-back front wheel design which makes possible a short wheelbase and at the same time distributes part of the load over the front axle.

Another notable feature of this heavy duty truck is a newly patented device known as the Hug Front Spring Rocker, the purpose of which is to eliminate the undesirable features of conventional front spring suspension in road building trucks.

The new model is powered with a Buda heavy duty six-cylinder truck engine 4¾ by 6, developing 126 horse power at 1850 R.P.M. It is equipped with a four-speed transmission and an auxiliary transmission making possible twelve speeds forward and three reverse, and giving a total reduction in low gear of 139.23 to 1. The wide variation in the operating speed of the transmission gives this truck an unlimited amount of power in low gear and at the same time provides for an operating speed of approximately 30 miles per hour in



the overgear drive. Other equipment includes two double reduction rear axles, both driven, and each equipped with air brake.

The body of the Model 99 Roadbuilder is a 10-yard specially designed quarry body as furnished by the *Easton Car and Construction Company, Easton, Pennsylvania.* Body bed is built of ⅜" plate steel and has a reinforced bottom of 3" oak sills and ½" plate. The oak sills and the ½" plate form a false bottom and absorb the shocks caused by the dumping and dropping of heavy rocks and stones. A Woods W-8 special heavy duty hoist completes the body equipment.

Further information will glady be sent to any one in the excavating industry who is interested. *Please mention The Excavating Engineer* when writing *Hug Company.*

Gas Electric Locomotive Dump Car

RECENTLY perfected by the *Differential Steel Car Company, Findlay, Ohio,* is a locomotive chassis with a dump body mounted on it. It is a self-contained unit carrying its own power plant. This locomotive is intended for service in open pit mining and quarry work and in industrial plants.

This gas-electric locomotive has a 24-yard level load dump body on it. The sturdy truck and frame construction has all the features of a locomotive and the dump body allows for a payload to be hauled on the locomotive as well as the trailer cars. The locomotive alone may be used for stock piling and a variable tractive effort may be obtained by varying the load on the body. It is not necessary under the light load conditions to carry the maximum weight on the locomotive.

The equipment weighs 45 tons light and 80 tons loaded. The air brake equipment is Westinghouse combination straight and automatic with Gardner Denver 60 ft. compressor belted from each engine, giving an air capacity of 120 cubic

feet per minute. Truck center distance 29 ft., wheel center 5 ft. 6 in.

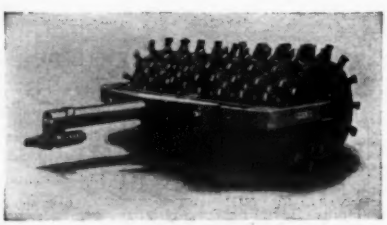
Essentially this particular equipment consists of a double power plant equipment mounted on a sling between the sills consisting of 2 Buda type JH-6 gasoline engines each rated at 155HP, at 1200 RPM., two generators Westinghouse Type 180-D-5, four type 908-RH motors and the necessary control apparatus for convenient and efficient operation of the locomotive.

This double power plant equipment will produce a maximum tractive effort of 36000 lbs. and will have a free running speed of 19 mi. per hr. light. The acceleration is exceptionally good.

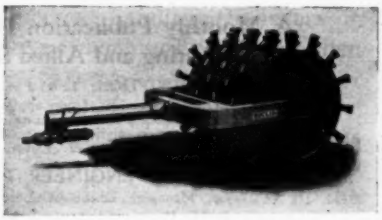
The equipment is flexible in operation, since one or both power plants may be used as desired. It is easily handled by the operator since there is no physical effort such as shifting gears required. It is economical to operate since one engine may be used when desirable and maintenance is considerably reduced on electric drive. The equipment performs better under extreme conditions of load and grade.

Euclid Tamping Rollers

THE latest Euclid Crane and Hoist development is the Euclid Single and Twin Tamping Roller. This is an improved design of the commonly known sheeps foot type of roller and features an oscillating action which permits the roller to conform to the contour of the ground.



In construction the characteristic Euclid drawbar is used. Both the single and twin tamping rollers are attached to the tractor by the original Euclid drawbar spring-mounted clevis thus eliminating a rigid direct jerk when starting and relieving both tractor and equipment of excessive strain. The rolls are built of high grade steel with cast steel teeth welded to the roll. These teeth are designed to be as nearly self-cleaning as possible.



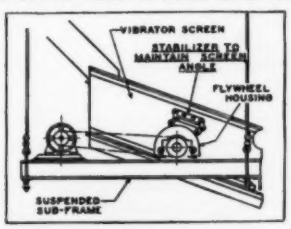
A great many state departments require the use of this type of equipment in all fills. It is the quickest, easiest and most economical method for settling or compacting fills on highways, railroads, dams and similar work.

For complete information address the *Euclid Crane & Hoist Company, Chardon Road, Cleveland, Ohio,* mentioning *The Excavating Engineer.*

Stabilizer for Vibrating Screens

A UNIQUE stabilizer mounting for vibrator screens has been recently announced by *Stephens-Adamson Manufacturing Company of Aurora, Illinois.* In place of the usual balancing springs at the four corners of the screen, a simple stabilizer unit is now mounted upon one side of the frame to hold the screen at an unchanging angle. The screen is free to vibrate with the eccentric vibrating shaft, but it resists the usual tendency to rock or swing out of the proper screening angle.

The stabilizer consists of two pairs of short arms, jointed elbow fashion and held parallel by a rigid cross bar. One end of each arm pivots on the flywheel housing, which is rigidly fastened to the heavy steel subframe. The other end of each arm is shackled to the screen body as shown in the accompanying illustration.



As can be seen, the two arms are free to swing or bend in any direction, but both must bend and swing together. In operation, the movement of the stabilizer is very slight. However, it effectively prevents the annoying tendency a vibrating screen has to buck and rock when sudden loads are received.

The principal advantages claimed by the manufacturer are: the screen body is free to vibrate, but is held positively at the desired angle; the screen angle is quickly adjusted to the most effective position by loosening two bolts on one side of screen; the screen has no tendency to buck or rock; subframe vibration is decreased by eliminating the reaction of the usual balancing springs.

Further information will gladly be sent by *Stephens-Adamson Manufacturing Company.* Please mention *The Excavating Engineer* when writing.

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The Business Situation

MANY REASONS are given for the failure of business to turn the corner rapidly and start on a steady up grade. At the present time the most important drawback to rapid recovery seems to be pessimistic business sentiment. The most important factor in increasing the speed of recovery will probably be growing optimism among business men.

How important these psychological reactions are was well demonstrated in connection with the German financial situation during the middle of June. On June 13th the German discount rate was raised from 5 to 7% in an effort to retard the exit of funds from that country. This move had little effect, however, and the first noticeable effect came with President Hoover's moratorium proposal which was made public on June 21st. President Hoover offered only a proposal but it had the effect of bettering business sentiment to such a degree that a noticeable change in the exit of money from Germany immediately took place.

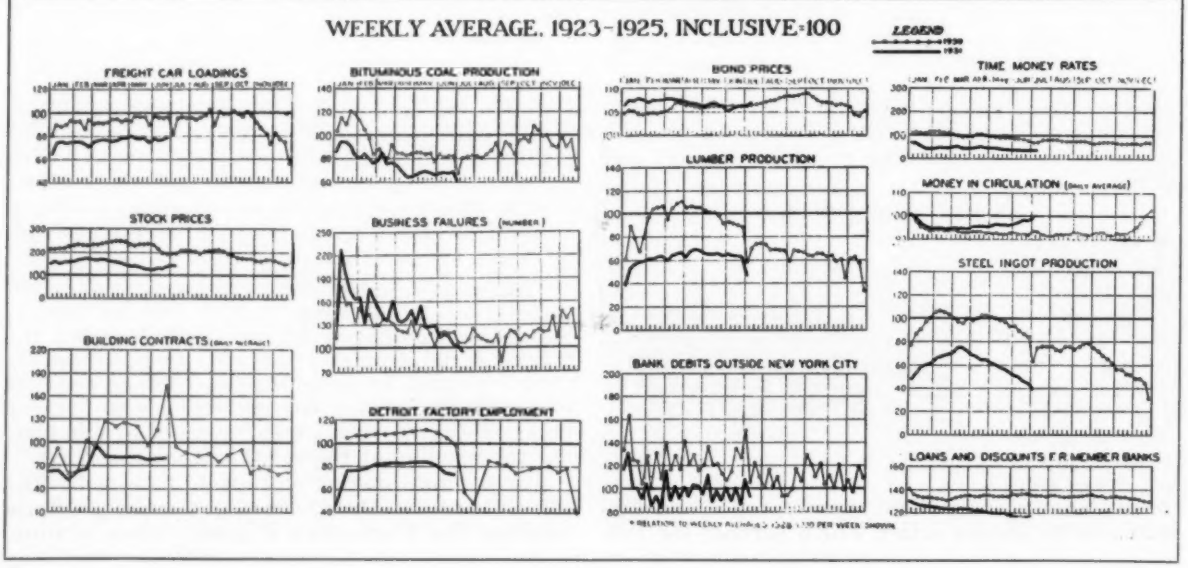
There are a great many fundamental factors pointing to a more or less steady up grade from now on, but perhaps the most striking promise for further improvement is the better sentiment that is at present found among business men.

The record of the stock market as a business forecaster is not a reassuring one but its actions in the last few weeks have indicated strength rather than weakness—an indication that business sentiment is improving.

Volume of total retail sales is a difficult figure to obtain. The best indicator of this, at present available, is the volume of business done by large department stores and the chain stores which normally do from 35 to 40% of city retail business. It is of interest to note that the volume of buying at the present time—volume in tons or units—is 10% greater than it was last year at these same stores. In the meantime industry has been operating at a rate much below normal which means that stocks of merchandise are being depleted. As the country's stock of goods is reduced this increase in demand will be passed on first to the wholesaler, the jobber, and finally to the manufacturer. From this "consumer goods" section of industry the activity will gradually be passed on to other divisions.

For the last year, and more, attention has constantly been called to the ease of money—the low interest rate. Money will lie idle just so long. In times of depression people seek the safest possible investment. They turn first to government bonds and "gilt edge" bonds, and these have held their highest levels since 1928. Competition for this

WEEKLY BUSINESS INDICATORS



form of investment increases the price and, as the interest rate goes down, investors gradually turn to the second grade bond which in turn begins to rise in price. Rise in prices breeds confidence and, disregarding the question of whether the change in bond prices is cause or effect, business gradually improves. It is significant that bond prices today are firmer. The movement of prices of second grade bonds during the next two or three months will be of prime significance.

June added $331,879,700 to construction contract awards for the 37 states east of the Rockies bringing the sum total for the first half of the year up to $1,808,226,800.00, a loss of 15 per cent when contrasted with the corresponding period of 1930. Residential building fared best among the three major construction classes in both the second quarter and the first half of the current year, according to *F. W. Dodge Corporation.*

The only individual class of building to gain during the first six months of 1931 as compared with that period of 1930 was public buildings which showed $74,451,400 in the current year against $62,322,300 in 1930.

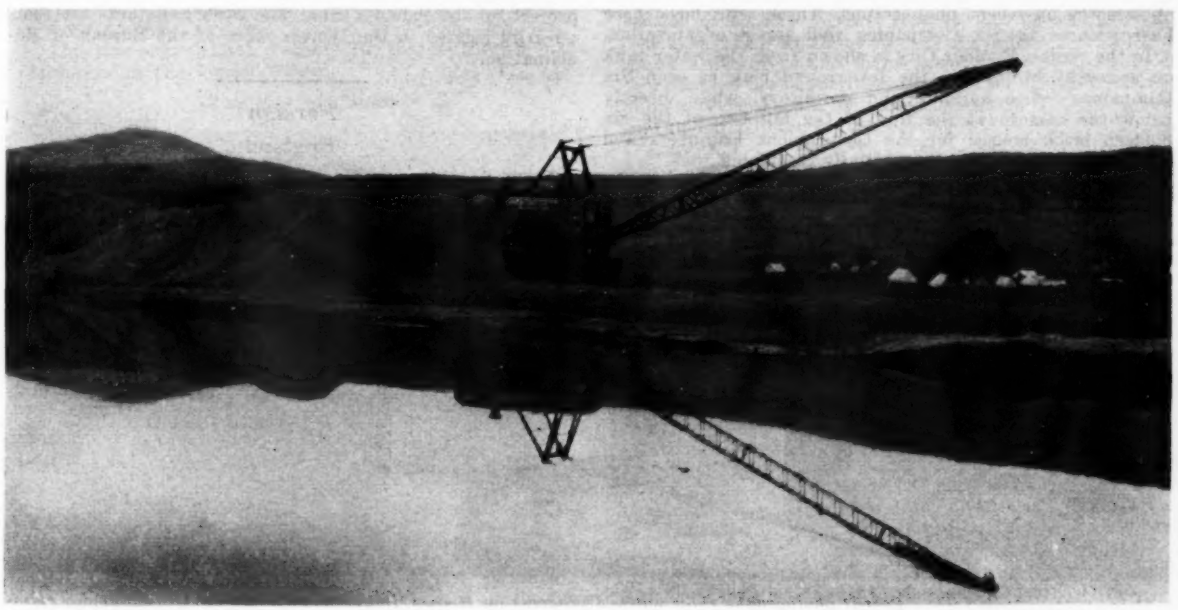
The New Orleans territory makes the unique showing of a gain for the six months of 1931 as compared with a like period of 1930. $86,329,300 is the 1931 showing for the half year against $63,614,500 in 1930. Of this amount $5,482,200 was placed in residential building, $13,011,900 in non-residential building, and $67,835,200 in public works and utilities.

Spurting ahead of May's $306,079,100, the month of June divided its $331,879,700 among the three major classes of construction as follows: residential, $72,744,700; non-residential, $104,623,000; and public works and utilities $154,512,000.

Monks-Ulen Operates Large Draglines in Greece

THROUGH the courtesy of Operator H. L. Reynolds, who is at present handling the levers on one of the Bucyrus-Erie machines on Monks-Ulen & Company's project, Struma Valley in Macedonia, northern Greece, we reproduce three interesting pictures. The larger picture is remarkable because of the excellence of the reflection of the Bucyrus-Erie Class 200 Diesel-electric in the waters of the Kirkini River along which it is doing ditch and levee work. Several of the operators of the five Bucyrus-Erie draglines on this job shown in the

smaller picture were caught by the camera following a dinner party given by master mechanic in charge. The cover picture shows two of the Class 200 machines digging among the stumps of old Macedonia where St. Paul used to preach. Mr. Reynolds tells us that these machines have no trouble putting out 296½ cubic yards per hour with all digging under water. Fuel consumption is about 15 gallons of Diesel fuel oil per hour.



SHOTS FROM THE FIRING LINE

Pennsylvania Requires Maintenance of Prevailing Wages on All State Contracts

FOLLOWING the approval by Governor Pinchot of the legislative measure specifying that contractors engaged on state projects must pay prevailing wage rates, engineers in the offices of Secretaries Malone and Lewis have begun the task of establishing wage rates for incorporation into specifications on all building and road projects.

In all future contracts with the state, the specifications will contain a schedule listing the prevailing wages in the district in which the work is to be done. The contractor will be required to adhere to the schedule. As stated above this not only applies to buildings, but also to road contractors.

Developed Water Power of the World Doubles in Ten Years

THE capacity of the water wheels in the constructed plants of the world, according to estimates made by the United States Geological Survey, Department of the Interior, was 23,000,000 horsepower in 1920, 29,000,000 horsepower at the end of 1923, 33,000,000 horsepower at the end of 1926, and 46,000,000 horsepower at the end of 1930; an increase of 100 percent in 10 years. The increase during the last four years in Europe has slightly exceeded that in North America. According to these figures the United States has developed 14,885,000 horsepower of a potential 38,000,000 and Canada has developed 6,125,000 of a potential 18,000,000 horsepower. Outside of the United States the greatest increases in constructed plants have been in Italy, Japan, Canada, Germany, Switzerland, Austria, and Sweden. A large percentage increase is also shown by New Zealand, Mexico, Brazil, and India.

Hoover Dam Notes

STEADY progress on this gigantic dam building contract is noted by recent photographs. Three reproduced here bear witness to Six Companies well tuned organization.

In the center, Boulder City is shown from the water tank on a nearby hilltop. In the foreground may be seen Six Companies' office building and dormitory, while directly below the camera at the foot of the hill two of the six modern brick houses for the Government Engineers and their families may be seen partially completed.

Below the diversion tunnels on the Nevada side of the Colorado, three electrically driven air compressors are being installed. These are shown at the left. Each will deliver 4,000 cubic feet of air.

The canyon crew is housed in six large bunk houses perched on the canyon wall just above the cofferdam level. These canyon quarters as well as the mess hall are shown on the right.

Bids Asked for Madden Dam, Panama Canal Zone

THE Purchasing Department of the Panama Canal has called for bids for construction of the Madden dam and power plant, for which a cost limit of $15,500,000 has been set by Congress. Bids will be received until September 1st.

The need for completion of the Madden Reservoir and power plant as outlined by Chief Engineer R. F. Walter and Chief Designing Engineer J. L. Savage in a recent issue of "New Reclamation Era" are:

1 "To increase the storage water supply for the dry seasons so that it will not be necessary to lower the surface of Gatun Lake below elevation 80. If the surface falls below this elevation, the water depth in Gaillard Cut is insufficient to insure the safe passage of deep-draft vessels.

2 "To provide flood control, thus preventing probable damage at some time to existing works, and reducing cross currents in the canal at the present mouth of the upper Chagres River at Gatun Lake, these current being a serious menace to navigation during periods of heavy run-off.

3 "To eliminate the necessity of running the Diesel electric power plant during the dry seasons by the generation of power at the Madden hydro-electric plant, this to result in a considerable reduction of operating expenses."

The principal items and estimated quantities follow: 685,000 cubic yards of all classes of excavation; 646,000 cubic yards of earth and rock fills in embankment; 518,000 cubic yards of concrete; 38,000 cubic feet of grout; drilling 35,000 lineal feet of grout holes; placing 3,800,000 pounds of reinforcement bars; installing 79,719,000 pounds of small metal pipe and fittings; installing 705,000 pounds of large metal conduits; installing 1,487,000 pounds of structural steel; and installing 6,700,000 pounds of gates, hoists and other metal work.

Materials are to be furnished by the government.

Performance of the work is to begin within 30 calendar days after date of receipt by the contractor of notice to proceed, and plans call for completion within 1,350 calendar days from receipt of such notice.

Col. J. L. Schley, engineer of maintenance for the Panama Canal, is in general charge of the Madden Dam project. E. S. Randolph, designing engineer for the Madden Dam project for the Panama canal, and three assistants are temporarily located in the Denver office of the Bureau of Reclamation.

Foreign

England

Plans involving a total expenditure of approximately $10,370,000 were approved during April for the improvement of classified roads and bridges and the construction of new roads and bridges. These plans form a part of the government's program of economic works for the relief of unemployment.

Recent photographs show marked progress on Hoover Dam building.

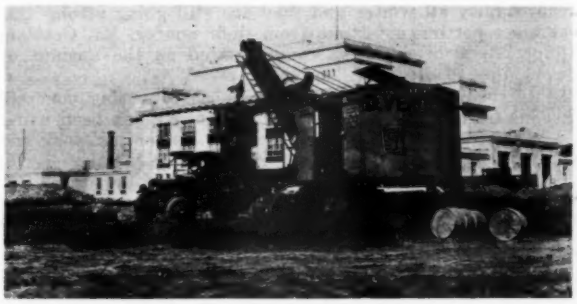
Ontario—Quebec Notes

By R. J. STAPLES

Standard Paving Company of Toronto, has opened a branch organization at Halifax, Nova Scotia, to serve as an operating center for the Maritime Provinces. Mr. E. L. Miles will be General Manager of the new Eastern branch.

The City of Hamilton has recommended that E. P. Muntz Limited be awarded the contract for the substructure of the proposed new high level bridge on York Street, at the western entrance to the city. Hamilton Bridge Company is recommended as contractors for superstructure.

Department of Public Works, Ottawa, is calling for tenders for erection of proposed bridge between Hawkesbury, Ont., and Grenville, Que., across the Ottawa River. Contract for approaches has been awarded to **W. A. McCarthy** of Quebec City. Proposed bridge is to be of concrete and steel.



The above illustration shows **D. Verochio's** Bucyrus-Erie Gas+Air shovel at work on the new Mile End Station for the Canadian Pacific Railway in Montreal.

New England Notes

By M. E. CONDRY

During the past year the following granite quarries have merged with the **Rock of Ages Corporation of Barre, Vermont.**

Phillips & Slack	Northfield, Vermont
Barclay Brothers	Barre, Vermont
George Straiton	Barre, Vermont
Canton Brothers	Barre, Vermont
Wm. Milne Granite Co.	Barre, Vermont
Eureka Granite Company	Montpelier, Vermont
Lawrence Company	Montpelier, Vermont
Grearson & Lane	Barre, Vermont
Perry Granite Company	Waterbury, Vermont
E. A. Chase Granite Co.	Northfield, Vermont

This new organization is one of the largest granite manufacturers in the United States.

By E. J. O'CONNOR

At the Holliston Trap Rock Company's quarry at Holliston, Massachusetts, the above Bucyrus-Erie 41-B steamer has moved 160,000 tons of the type of rock shown in this picture. Based on their experience with this machine they expect their repair bill for this coming season to be under $400.00. The Holliston Trap Rock Company officials are extremely well pleased with the 41-B which is really doing marvelous work—work that a much larger machine might be proud of.

New York Notes

William Crusan of Millwood, New York, sends us the snapshot reproduced herewith which shows Bill and the Bucyrus-Erie 41-B he is operating for the **Bates and Rogers Construction Company.**

Pennsylvania Notes

Operator J. D. Morris is still on the Bucyrus-Erie GA-2 for the **Cashion Slag Company** and is now located at Scottdale. Regarding the Gas+Air he writes: "She works just as nice as when we received her."

Anthracite Region

By T. H. BARRETT

Dewees Brothers have been awarded a stripping at Larksville by the **Hudson Coal Company** and have started work using a 1¼-yard gas shovel. They are planning to do most of their stripping with a long boom dragline.

Central Pennsylvania Quarry Stripping and Construction Company has been awarded a large stripping and loading job near the Loree breaker at Larksville by the **Hudson Coal Company.**

Stone and Webster Engineering Corporation has awarded the grading for the new Alaska breaker of the Reading Coal and Iron Company to **The Newhall Company** of Cleveland. The job involved moving nearly half million yards of refuse bank.

Timothy Butke, Inc., of Scranton has started a stripping job for the Lattimer Mines which will include the changing of a creek channel and the removal of a barrier pillar.

Rhoads Contracting Company of Ashland has started work on their new stripping at the Richards Colliery of the Susquehanna Collieries Company.

Pittsburgh and Vicinity

By J. S. WEAVER

Freeland, McHale and Patten have completed the excavation on the new air-port road for the Ross Construction. The excavating was done with Bucyrus-Erie Type 30-B and Gas+Air shovels and many records were broken on this work under the supervision of Mr. John McHale, who has fully recovered from his recent operation. Thomas Schovell and Robert Gilbert were operating the shovels.

George H. and O. J. Yoho, Morgantown, West Virginia, are away ahead of contract time on their state highway work at Uffington, W. Va. **G. M. Earnest** is operating a Bucyrus-Erie 43-B Gas Shovel on this work.

Sidney Grubbs is operating a Bucyrus-Erie Gas+Air Shovel for the **Pittsburgh Paving Company** in Carrick.

J. C. Bittner is operating and **Jim Kelley** firing a Type B Bucyrus-Erie Shovel for **Herb Flaherty** in the west end of Pittsburgh.

A $900,000 grade crossing elimination project has been ordered by the Pennsylvania Public Service Commission. The location of the improvement is at Witmer Station on the B. & O. R. R. near Glenshaw, Allegheny County. This consists of approximately 300,000 cubic yards of rock excavation, which will be transported on railroad equipment a distance of about 15 miles. After the relocation of the railroad tracks, the Pennsylvania Highway Department will call for bids for the relocation of one and one-half miles of the Butler Plank Road. The work will be paid for by the railroad, the state and Allegheny County. No doubt this work will be started in the near future.

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THAT NEVER LOWERS
ITS STANDARD . . . .

THIS is what to expect of an Owen—Scooping up capacity loads every time from first to last trip—getting more work done—costing less to do it. Cleaning up the job in fewer hours—After one job is done—ready for the next with no time out for repairs or reconditioning. Just a sturdy, dependable worker doing a "bigger day's work than any other bucket of the same weight and capacity". A reliable producer—A money-saver and money-earner.

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6026 Breakwater Ave., Cleveland, Ohio

Owen Buckets

Shots From the Firing Line — *Continued*

Buffalo and Vicinity

By D. E. WHITE

Francis Callahan, Auburn, is away ahead of schedule on his State road job out of Watertown. Francis owns several Type "A" Bucyrus-Erie shovels, and it is surprising the amount of work his organization is capable of doing with these ⅝ yard machines. We are envying "Cal" who, we understand, is taking over a cottage up on the lake which will keep him near the job and, at the same time, act as a vacation for the family.

Burns Brothers & Haley have made excellent progress on their water and sewer job at Watertown. They have been using a Type "B" Erie and a Keystone full revolving pull-shovel.

The City of Watertown kept their Bucyrus-Erie electric shovel busy all winter and they are still going strong this summer getting out stone from their quarry. Mr. Getman, Superintendent, is to be congratulated on the amount of work they have turned out.

Morris Soper of Seneca Falls, is sure pouring concrete on his State Road job out of Crockets. He has been using a one-yard Osgood and a ½ yard General on his work and claims that his new bulk plant is giving him wonderful results. He has also started his other job at Potsdam.

The Solvay people, Syracuse, are getting out rock for the **Port of Oswego** job and furnishing rock to the **Great Lakes Dredge & Dock Company** and, also, **Phelps & Son,** Detroit, both of whom have considerable sea-wall to put in on this job.

Virginia Notes

A wide variety of jobs is the portion of today's excavating contractor. Recently we have had the pleasure of presenting to our readers not only the usual run of excavating jobs on highways, railroads, basements, etc., but also grading jobs for airports, golf courses, parks, and artificial lakes. And here is another to add to the collection. The above view was taken on the operations of **J. S. McCandless Construction Company** of Warrenton, and shows the grading of a $50,000 polo field near Middleburg. Mr. McCandless is loading the material to trucks with his Bucyrus-Erie Gas+Air.

Southern Notes

By R. S. WELFER

The Hardaway Contracting Company of Columbus, Georgia, at this writing has practically completed their 43 miles paving project near Charleston, South Carolina, which they began in January.

Dickson & Carroll of Greenville, South Carolina, finished their work near Mullins recently and are now in Northern Georgia on a paving project. They expect to finish this by early August and drop back into South Carolina, on a paving job where they are now grading.

The Newell Contracting Company of Greenville, South Carolina, has started grading on projects awarded them in South Carolina.

For your convenience in writing to The Owen Bucket Company, you will find a card bound in this issue.

Pile that load high!

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A full load every trip. Quick on the get-away. Speedy on the run. Over the dump in high. Fast on the turns. And back for another load ahead of time. That's how the Allis-Chalmers "35's" keep wagons at the grader or shovel and speed up dirt moving.

Allis-Chalmers are designed for the new requirements in construction work. They'll help you beat time schedules and make a profit on close bids. We'll prove it with a demonstration on your job. Call your Allis-Chalmers dealer. No obligation. Allis-Chalmers Manufacturing Co., Springfield, Ill., Milwaukee, Wis.

A DEMONSTRATION *on your job will convince you*

For your convenience in writing to Allis-Chalmers Manufacturing Co., you will find a card bound in this issue.

Shots From the Firing Line — *Continued*

The Spartanburg Contracting Company of Spartanburg, South Carolina, has received work orders on one of the South Carolina grading jobs on which they bid low.

N. K. Dickerson is in charge of **R. B. Tyler's** bituminous surfacing jobs in South Carolina.

C. G. Fuller of Barnwell has finished his bituminous surfacing near Ehrhardt and moved to the four new projects recently awarded.

L. M. Gray of Gainesville, Florida, is at work on a bituminous surfacing project in South Carolina.

The Langston Construction Company of Orlando received some good work in South Carolina.

A. H. Singer of Lafayette, Albama, has finished his project south of Auburn.

Sutton Brothers of Nashville reported their Tuskegee, Alabama, work about completed in late July. They operated two shifts and pushed the work vigorously.

Hooper Construction Company of Bunnell, Florida, is making good headway on the Augusta levee job.

South Carolina has a small letting on July 7, and a large one on July 28.

Georgia received bids on 29 grading, paving and bridge projects on July 15.

North Carolina received bids on eight projects on July 21.

BY W. W. WHORLEY

F. L. (Fish) Busby is operating a Marion 21 gas-electric shovel for the **Woodward Iron Company** near Cedartown, Georgia.

J. L. Foy has been operating a Link-Belt dragline for **Ward-Hayes Construction Company** on their drainage work at Birmingham.

J. T. (Jess) Moses is handling an Osgood shovel on the same job.

We are sorry to report that **W. N. (Newt) Hubbard** recently lost one of his feet under the wheels of a freight train. Newt formerly operated a 100-B shovel for the Alpha Portland Cement Company near Birmingham.

J. C. Bert is operating a Bucyrus-Erie 52-B for the U. S. Government near Greenville, Mississippi.

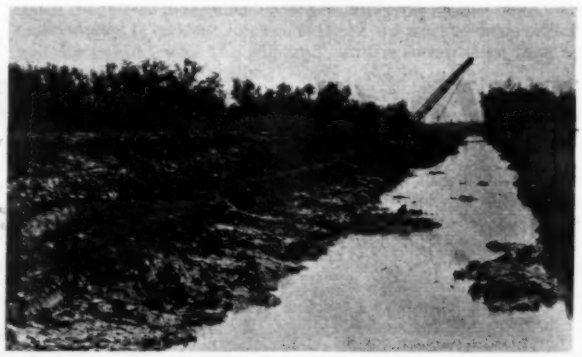
Oh, Hula, Hula!

She: "Why are so many men going to the Hawaiian Islands this summer?"

He: "Because the grass crop was a failure."

New Orleans and Vicinity

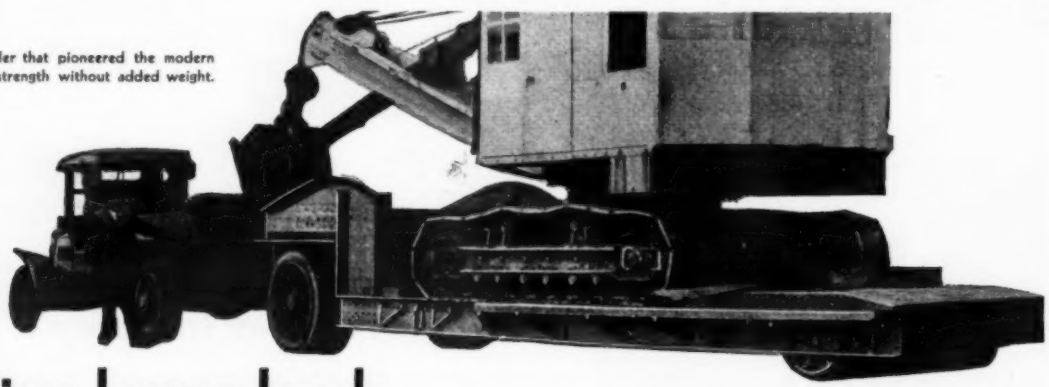
BY F. W. WEBSTER



Late in February, August A. Buras of New Orleans purchased a 1035 Bucyrus-Erie dragline and started in on a 250,000 cubic yard highway fill on the extreme lower delta of the Mississippi River. This road will extend from Buras twenty miles south toward the mouth of the river and at this writing he has completed about ten miles of it. Just recently the State Highway Commission has decided to extend the road somewhat further than at first decided, which will increase the job by about 100,000 cubic yards.

To anyone deciding to motor to Louisiana, it is recommended that they take the opportunity to drive from New Orleans on the west side of the river down to Buras and over this new road as it leads directly through Louisiana's

Here's the trailer that pioneered the modern idea of greater strength without added weight.



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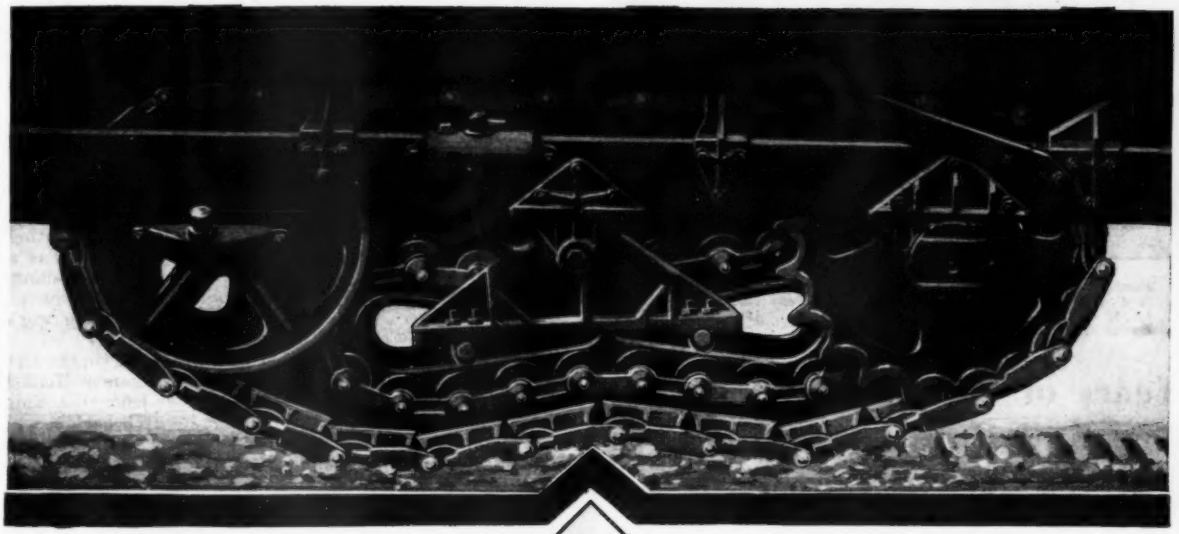

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Other Patents Pending

more YDS. PER DAY

At full speed LINN pulls forward or backs up . . . automatically dumps to the left or right or rear . . . operates in spaces where turning is impossible.

The amazing giant power of the Linn—its ability to overcome the most difficult and treacherous hauling conditions, with perfect safety of driving—making its own roads where none existed, has resulted in its employment in the country's major construction projects.

With *patented flexible traction*, a feature of design exclusively LINN'S, ten ton gross loads are carried and pay loads towed with same power, which assures profitable performance whether your job be quarry stripping, logging, grading, road building or general construction.

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Buckeye Chain-and-Bucket Type Trench Excavators are built in 5 different sizes. Standard cutting widths range from 24 to 52 inches, cutting depths to 24 feet. All dimensions inclusive.

Years of Satisfactory Service Are Built Into Every Buckeye Type C Trencher

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With over thirty years of successful engineering and mechanical experience, the Buckeye operating principle and construction have been thoroughly tested and proven. Consequently, its endurance and efficiency may be accepted as fact—positive assurance that your money is safely protected.

The *Rotary Auxiliary Cutter*, an exclusive Buckeye feature, greatly increases the cutting widths—the working range—of every Buckeye Type C. One of these excavators will most likely cut all of your trenches. May we send you complete assembly specifications and prices?

The Buckeye Traction Ditcher Co.
FINDLAY, OHIO

There's a Buckeye Sales and Service Office Near You

for over thirty years **Buckeye**

Shots From the Firing Line — *Continued*

famous orange groves which produce, so it is claimed, the finest Navel oranges grown anywhere in the world.

Mr. Buras operation in this section is one of several hundred different highway jobs now in progress throughout the State of Louisiana. He expresses himself as being highly pleased in every way with his 1035.

East Tennessee Notes

By R. F. McLAUGHLIN

Lebanon Bridge Company, of Lebanon, has moved their outfit in on their excavating contract on Highway No. 29 at Dayton, Tennessee. They have four Sixties, two Thirties and two Twenty "Caterpillars" with Athey Three-Way and Euclid bottom dump crawler wagons, and two Koehring gas shovels.

George Fisher of Lenoir City has about completed his paving contract on Highway No. 29 south of Dayton.

Breeland & Lyle of Birmingham are about fifty per cent completed on their sub-contract for excavating on Highway No. 29 south of Spring City.

John Oman, Jr. of Nashville is still busy on excavating work south of Spring City on Highway No. 29. He has a Monarch Seventy-five pulling one Western crawler dump wagon and several Bulldog trucks hauling from his shovel.

B. G. Young of Jonesboro is finishing his grading work on the Parksville-Copper Hill Highway.

Booth & Flynn of Pittsburgh are driving piling on the last river pier of the City of Knoxville—Knox County Henley Street Bridge across the Tennessee River at Knoxville. This bridge, which is of the deck type concrete arch bridge, will be the gateway to the Great Smoky Mountain National Park. The State of Tennessee has surveyed the route for the proposed highway leading from the south end of this bridge and connecting with the highway grading project now nearing completion in Sevier County. **Chandler Brothers** of Virgilina, Virginia, have the general contract in Sevier County. **Phillips & Shea** of Knoxville are subbing near the Blount County Line. This has been a particularly hard job of grading due to the peculiar rock and shale formation encountered.

Blount County, Tennessee, Mr. George Hitch, Road Commissioner, is co-operating with the Tennessee State Highway Right-of-Way Commission, in obtaining right-of-way for a proposed road leading from Maryville into Cades Cove in the Great Smoky Mountain National Park, by way of Deal's Gap in the Chilhowee Range.

Chandler Brothers of Virgilina, have recently made up for time lost in May because of rain on their work near Sevierville, Tennessee. They are bringing in their Gas+Air shovel from Centerville, Tennessee, where L. J. Chandler has been moving big yardage.

C. J. Murray, Contractor, Knoxville, has started work on University of Tennessee Infirmary at Knoxville, Tenn.

Detroit and Vicinity

BY G. E. PETERSON

A. R. BAILEY

It is with deep regret that we report the death of A. R. Bailey of Ann Arbor, on June 29th, caused by injuries received in an automobile accident. Mr. Bailey was Engineer Manager of the Washtenaw County Road Commission and a prominent member of the Michigan Association of Road Commissioners and Engineers.

Persinger Excavating Company of Lincoln Park is doing the excavation for the Smith Paving Company on their job in Alpena County.

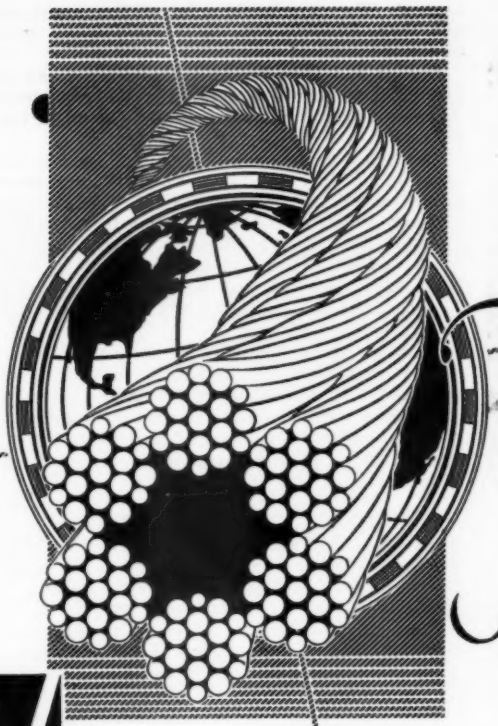
Walter Stroman, Pontiac, is doing the excavation on the Whitlow and Holbeck job in Midland County.

The Michigan Board of Aeronautics proposes to develop about twenty emergency landing fields between Lansing and the "Straits" and from the "Straits" to Marquette.

The R. D. Baker Company of Royal Oak has their 50-B Bucyrus-Erie machine on their sewer work in Flint.

The Thomas McNally Company of Saginaw has 9 miles 20-foot concrete on U. S. 10. This job involves 120,000 yards of excavation.

For your convenience in writing to The Buckeye Traction Ditcher Co., you will find a card bound in this issue.



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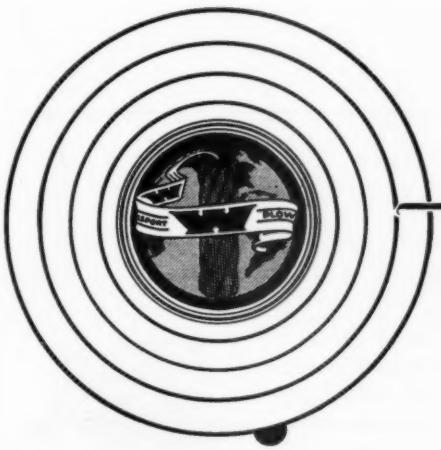

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Shots From the Firing Line — *Continued*

H. W. McKenzie of Dearborn has 7.2 miles of 20-foot concrete in Lenawee County. This job has 95,000 yards of dirt.

The Thomas E. Currie Company of Detroit is doing the East Jefferson Avenue work for the Macomb County Road Commission.

The Louis Garavaglia Company of Detroit has been awarded 13.6 miles of grading and drainage on U. S. 23 in Iosco County. This job goes from East Tawas to Oscoda and involves 352,000 yards of excavation. The Alpine Excavating Company is placing a Bucyrus-Erie B-2 steam shovel on this work with the Garavaglia Company.

Leon D. Cool of Hastings, was awarded 11.8 miles of grading and drainage in Kalkaska and Antrim Counties.

Adams and Lotte of Kalamazoo, have started excavation on 4.8 miles of grading and drainage in Jackson County. This job involves around 177,000 yards of excavation and they are using their Bucyrus-Erie 1035 and steamer.

Globe Construction Company of Kalamazoo, completed their paving work for the city of Albion about July 1st.

Ray Parham of Bronson, Michigan, is about done with both his State and County work in Jackson County and is moving his outfit to Branch County where he has about 3.5 miles of gravel to build for the Branch County Road Commission.

The viaduct on Miller Road, Detroit over the main line of the Michigan Central is now open to traffic and the finishing touches are being put on.

The new Grosse Ile bridge built by the Wayne County Road Commission has been completed and opened to traffic. Traffic over the old toll bridge will undoubtedly be very light in view that the new bridge is not a toll bridge.

Hudson and Coons of East Lansing are low bidders on 1.5 miles of 40-foot concrete in Berrien County.

Jutton-Kelly Company of Milwaukee and Detroit has the railroad work on the P. M. Ry. and Ford Road grade separation. They are using a locomotive crane on the piling and three Bucyrus-Erie machines for the excavation and material handling.

Bryant and Detwiler of Detroit, are doing the concrete and steel work which carry the Wabash tracks over the Allen Road and Outer Drive. Mr. Campbell has charge of this job.

The Bruce Excavating Company of Detroit, completed excavation on July 1st for a $75,000.00 warehouse building at 3rd and York for the General Electric Company. The general contract has been awarded to A. A. Albrecht Company of Detroit. The Bruce Company had a B-2 on this job with Madre Bruce at the levers.

H. A. Hoxie of St. Joe, is low bidder on .43 miles of 20-foot concrete in Ottowa County, involving 40,000 yards of excavation.

Hersey Gravel Company of Hersey, Michigan, was low bidder on 5.4 miles of 20-foot concrete in Tuscola County with about 175,000 yards of excavation.

Fry and Kain of Grand Rapids were awarded a mile of sewer by the City of Lansing at $76,891.05. This company has just completed a large sewer job in Louisville, Kentucky.

C. A. Cornell of Saginaw, who has been associated for the past 5 years with Keller Tractor Company of Detroit, has formed a new company known as the Saginaw Cornell Tractor Company, to sell and service Caterpillar tractors in North Eastern Michigan. The new company is located at Bristol and Water Streets, Saginaw.

Chas. H. Donaldson's Bucyrus-Erie Gas+Air shovel is working on the Wayne County Outer Drive job. Vern Boody is at the controls with Mac McCormic handling the work on the grade.

Paul and John Gillisse of Grand Rapids have been awarded a trunk sewer job in Grand Rapids.

P. Vander-Vien and Sons of Grand Rapids have been awarded a widening job on U. S. 16 near Lansing. The total mileage is 2.6 miles and their bid was $76,993.00.

James W. Taylor and John B. Taylor of Birmingham, formerly operating as Taylor Construction Company, announce their incorporation as **Taylor Brothers Company, Inc.**

Chicago and Vicinity

BY H. C. HELT

The Illinois State Highway Letting, which was to have been held in Springfield on July 15th, has been postponed until further notice, and no bids will be received until all contractors have had an opportunity to revise their bids which were due to be opened that date. This will effect about four million dollars worth of proposed paving work, on which the Department of Public Works and Buildings, Division of Highways, at Springfield, Ill., had planned to receive bids on the 15th.

The reason for this postponement is because the Highway Division is arranging to standardize more or less on a fixed scale of wages for labor for doing certain classes of paving work. This will mean higher wages for all paving

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Wedge Rope Sockets
are the safest, quickest and most convenient way of attaching wire rope. BULL-DOG sockets are special annealled steel castings, designed so that the rope pulls directly in line with the point of attachment. They can be applied by unskilled labor and without special tools - and - they never let go.

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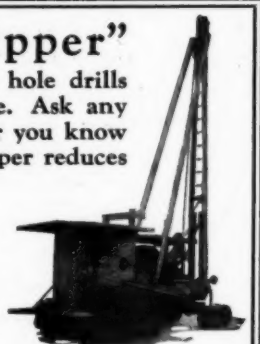
"Loomis Clipper"

"Loomis Clipper" blast hole drills give you cheaper footage. Ask any "Loomis Clipper" owner you know to tell you how the Clipper reduces his drilling costs.



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YES, YOU CAN INCREASE YOUR YARDAGE and LOWER HAULING COST

Western Crawler Wagons equipped with Spring Windup on an Illinois Road job. The Spring Windup is an exclusive feature of Western Wagons. It requires no special attachment on the tractor.

INSTALL Western Crawler Wagons equipped with the Western Spring Windup and watch the results. These sturdy all-steel wagons are mounted on broad Athey Truss Wheels that overcome all ground conditions.

The Spring Windup permits the tractor driver or the dump boss to dump the load and close the wagon doors after the load has been dumped. This releases the wagon man for other duties and speeds up the work. This simple mechanism is sturdily built and requires no special attachment on the tractors.

The Western line of Crawler wagons with Spring Windup includes sizes for any crawler-type tractor from 30 H. P. up that you have available. Bulletin 31-HK just off the press gives complete information. Write for a copy.

WESTERN WHEELED SCRAPER COMPANY
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WESTERN

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Shots From the Firing Line — *Continued*

jobs in the future and will not allow the contractor to lower his bid with the idea in mind of using cheaper labor than has heretofore been obtained.

At the Illinois State Highway Letting at Springfield, Ill., on June 16th, the following contractors were the successful low bidders: **Edward M. Rocho** of Freeport was low on Section 106-X in Kane County, 13.2 miles, with a bid of $309,888.87. **G. H. Summerville** of Harvey was low on Section 622 in Cook County, 2.70 miles, with a bid of $100,-179.45. **Chicago Heights Coal Co.**, Chicago Heights, was low on Section 539-X in Cook County, 1.74 miles, with a bid of $84,010.05. This same company was also low on Section 524 in Cook County, 6.49 miles, with a bid of $274,419.34. **S. J. Groves & Sons Co.**, Libertyville, were low on Section 531 in Cook and Lake Counties, 9.77 miles, with a bid of $286,161.58. **The Municipal Paving Co.**, Oak Park, of which Mr. Wm. Goelitz is the President, was low on Section 541X in Cook County, 2.97 miles, at a price of $99,444.83, and Section 542 in DuPage County, 1.74 miles, with a bid of $28,996.43. They were also low on Section 585 in Cook County, 2.68 miles, with a bid of $109,444.00. **M. Hayes & Sons**, Chicago, were low on Section 133 in Knox and Stark Counties, 4.80 miles, with a bid of $84,897.00. **W. F. MacDonald Deerfield**, was low on Section 105A, Marshall and Putnam Counties, 3.58 miles, with a bid of $49,913.00. **The Acme Engineering & Construction Co.**, Chicago, was low on Section KB-2, with a bid of $43,245.00, and Section 533H, with a bid of $73,616.00. **Milburn Bros.**, Mt. Prospect, were low on Section 70X2, in Lake and Cook Counties, 3.19 miles, at a price of $106,329.14, and Section 120Y, Cook County, 3.2 miles, at $91,673.80. **Arcole Construction Co.**, Niles Center, was low on Section 583Y in Cook County, 1.61 miles, with a bid of $32,065.00, and on Section 584Y in Cook County, 5.37 miles, with a bid of $115,966.00. **Congress Construction Co.**, Chicago, was low on Section 123B in Calhoun and Pike Counties, with a bid of $38,684.00, and on Section 101B with a bid of $9,354.00.

A Machine for Shifting and Raising Your Track

If you are operating a quarry or open pit mine, engaged in a construction job where track must be raised and shifted frequently, here is a money saving investment. It is no longer necessary to maintain a large labor gang for this work. No longer need there be delays to your other operations. This machine and a few men will do the work, saving you time and money. If you shift or raise track, you need this machine.

NORDBERG MFG. CO., Milwaukee, Wis.

THE NORDBERG PATENTED TRACK SHIFTER

H. A. Tewel is now Superintendent of **Neal Gravel Company** at Covington, Indiana. **A. H. Warnick** is Superintendent at Attica and his brother **Lester Warnick** is Superintendent at Cayuga, Indiana.

Pronger Bros., of Blue Island, have sublet a job on which they were low bidders on March 4th at the Illinois State Highway Letting, Section 112, Route 59, in Dupage County, to Stanley Jaicks Co., of Oak Park, Ill.

A. H. Truax has been elected President and L. S. Killen and J. O. Westlund, Vice Presidents of the **Truax-Traer Coal Company**, 332 South Michigan Avenue, Chicago, according to a recent announcement.

An earlier announcement, received too late for the July issue, was made of the appointment of John A. Howe as Executive Vice President.

Iowa

BY E. T. OBENCHAIN

The Mississippi River Scenic Highway project is the cause of a lot of activity, especially in Jackson County. This road when completed will parallel the Mississippi River through the State of Iowa.

Tom Higgins has been moving lots of dirt since April with his shovel and dragline with the Nelson boys at the levers. He is working near Bellevue.

V. E. Dzaboff of Dubuque has just started north of Bellevue with his shovel. Operator Duesenberg is making the dirt and rock move.

C. F. Betz of Sioux City is starting his job near Sabula and **Paul Betz** is working south of there.

Ed. Hughes has just finished clearing off a hill at 5th and Kee Way in Des Moines. In spite of the heat, Operator J. W. Sullivan managed to load over 280-4-yard trucks in 10 hours.

Minnesota and the Dakotas

By H. L. JONES

Bids were opened in St. Paul July 21st on four grading projects, three shouldering projects, two graveling projects and seven bridges. The grading work totals 40.6 miles and **involves 1,519,160 cubic yards of excavation.** This call for bids will bring the year's grading work to 60.6 miles. About 175 miles more of grading will be let during the next few weeks. The largest of the grading jobs let July 21st is for 5.8 miles between Stockton and Winona and comprises 783,000 cubic yards of excavation. The next largest is for 16 miles between Eagle Bend and one and one-half miles north of Long Prairie, involving about 338,400 cubic yards of excavation. The other grading jobs are for 13.8 miles between Stewartville and Spring Valley with 321,000 cubic yards of excavation and 5 miles between the Lynd road and Marshall with 76,760 cubic yards of excavation.

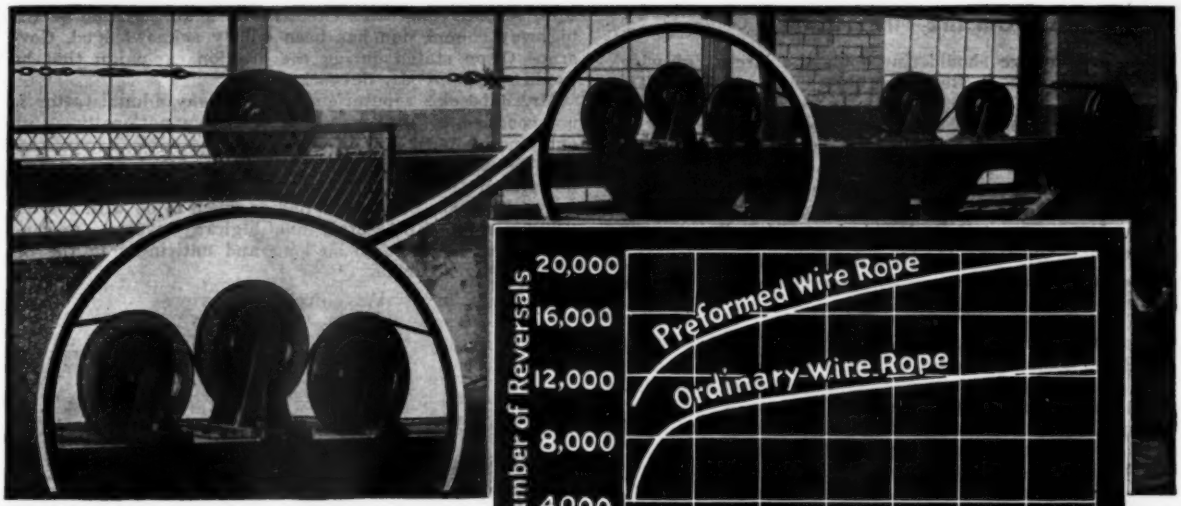
The shouldering work totals 34.5 miles and involves 228,000 cubic yards of shoulder grading. The largest of these jobs is for 16.9 miles between Bagley and Wilton and comprises 134,000 cubic yards of shoulder grading.

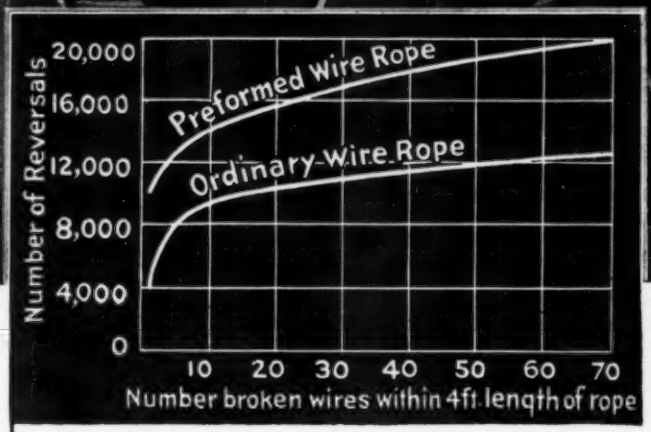
Bids were also opened for 11.9 miles of graveling between Thief River Falls and Holt with about 9,520 cubic yards of gravel surfacing and 12.4 miles between Gully and Clearbrook with about 9,920 cubic yards of surfacing.

The largest of the seven bridge jobs is for a four-span structure to be located southeast of Montevideo over the Minnesota River. It will be 355 feet long.

Highway contracts totaling $546,701.00 for which bids were opened June 30th at St. Paul have been awarded by C. M. Babcock, Minnesota Hwy. Commissioner. In addition, bids were opened on three bridges totaling $54,116.00 for which contracts will be awarded soon. The outstanding project at this letting was the grading of 14.3 miles between one and one-half miles north of Cusson and six and one-half miles northwest of Cook. This project involved 605,000 cubic yards of excavation and was awarded to **Ralph Whitmas of Bovey, Minnesota.** His bid was $272,665. **R. P. England**, Hastings, was the successful bidder on grading 6.9 miles between Excelsior and Hopkins. This project involved 780,000 cubic yards of excavation and was awarded on a low bid of $53,475.

For your convenience in writing to Nordberg Mfg. Co., you will find a card bound in this issue.





Wire ropes are oscillated back and forth over a series of sheaves, as shown above. The arrangement of the sheaves, the tension and the speed can be made to approximate actual operating conditions.

●

The chart at the right is a typical comparison between Lay-Set Preformed Wire Rope and ordinary wire rope, both cables being of the same size, material and construction.

FATIGUE TESTS PROVE THAT LAY-SET IS A BETTER ROPE...

In the above chart compare Lay-Set with ordinary wire rope. At 10,000 reversals one wire of Lay-Set Preformed Wire Rope was broken. 16 wires of ordinary wire rope were broken.

At 12,000 reversals, 3 wires of Lay-Set are broken as against 53 wires broken in ordinary wire rope.

Results of many such tests on all constructions and sizes of wire rope tie in with the performance of Lay-Set Preformed Wire Rope in service—proving that the increased service with Lay-Set is due largely to Lay-Set's ability to withstand fatigue.

30% TO 300% INCREASED SERVICE

On the same equipment, and under identical operating conditions, Lay-Set Preformed Wire Rope users are receiving from 30% to 300% increased service—depending of course, upon the nature of the service and the character of the equipment.

This increased service is a vast economy over ordinary wire rope, saving Lay-Set users a tidy sum each year. Also, fewer cable replacements mean further savings in labor, and fewer shutdowns.

Don't put it off any longer. Mail the coupon for complete information.

HAZARD "KORŌDLESS"

AGAIN Hazard pioneers in wire rope manufacture, in the development of a new rust-proof wire rope. Hazard "Korōdless" Chrome Nickel (Stainless Steel) Wire Rope is absolutely resistant to salt water and practically any acid or alkali. It operates safely in temperatures up to 1650°F.

●

Hazard "Korōdless" Wire Rope, like Hazard "Lay-Set," is Preformed. For full particulars write today.

CHROME NICKEL WIRE ROPE

18 8

HAZARD WIRE ROPE COMPANY

WILKES-BARRE, PENNSYLVANIA

New York Pittsburgh Chicago Denver Fort Worth Los Angeles San Francisco Birmingham Philadelphia Tacoma

America's First Wire Rope Since 1848

HAZARD WIRE ROPE COMPANY E. E.-8-31
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Send complete information regarding (please check)
☐ Hazard Lay-Set Preformed Wire Rope.
☐ Hazard "Korōdless" Wire Rope.

Name and Position.....

Company.....

Address.....

Wire Rope to be used for.....

HAZARD LAY-SET PREFORMED WIRE ROPE

In writing to Hazard Wire Rope Company, please use coupon or card bound in the center of this number.

Shots From the Firing Line – *Continued*

There were five shouldering jobs, the largest of which was awarded to **S. J. Reader**, Minneapolis, at $40,271. This project was for 16.5 miles between Aitkin and Lansford. **Nordquist Brothers**, St. Paul, were awarded a contract for shouldering 20.5 miles between Cannon Falls and Four Corners on a low bid of $30,369. The shouldering of 18.7 miles between Hector and Brownton was let to **Charles Weaver** of Anoka. His bid was $17,647. Mr. Weaver also received a contract for shouldering 13.9 miles between Hector and Olivia at $13,898.

JOSEPH M. THORNTON

Joseph M. Thornton, President and Treasurer of Thornton Bros. Company, paving and road contractors, St. Paul, died July 1st at Rochester, following an operation from which he was unable to rally. Mr. Thornton was 59 years old and had been in contracting since he was a youth. The firm of Thornton Bros. Company was organized in 1915, and he has been president from its organization. He was also president and treasurer of the Moose Lake Sand & Gravel Company.

He was a member of the Minnesota legislature for three terms from 1915 to 1919 as a representative from the fifth ward. He has been actively connected with many civic improvements of St. Paul. His firm handled a number of large city and county projects including the new Third Street viaduct and the Anoka Cut-off. He was a member of the Builders Exchange of St. Paul, the St. Paul Association, and was a director of the Northwest Branch, A. G. C. He is survived by five sisters and four brothers.

Chas. M. Babcock, State Commisisoner of Highways of Minnesota has been reappointed commissioner for two years from June 25th by Governor Floyd B. Olson. This action will meet with general approval throughout Minnesota, for Mr. Babcock's effective work at the head of the highway commission has been widely acknowledged. Governor Olson stated during the election campaign that he would reappoint Mr. Babcock.

Mr. Babcock's reputation as a highway administrator is not confined to Minnesota. He is known nationally as an outstanding authority in his field. Under his administration the Minnesota trunk highway system has developed to its present status from the primitive stages of earlier years. No other person has had so much to do with the development of Minnesota's fine highway system, and no other man has labored so long and untiringly in the interests of good roads.

Greece Uses Johnston

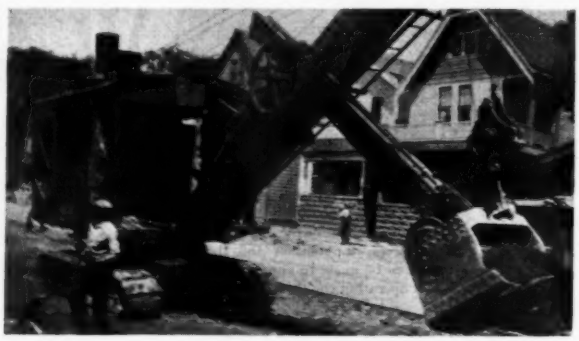
JOHNSTON Boilers specially constructed to meet the demands of the contractor have received wide acceptance throughout the world. Absolute dependability wins new friends every day.

65 years of building boilers has taught us to build this valuable feature into each and every JOHNSTON unit.

JOHNSTON BROTHERS, Inc.
Box No. 310 - FERRYSBURG, MICHIGAN

Wisconsin Notes

By CARL J. BACHMANN



This Bucyrus-Erie Type B-2 steam shovel, owned by the **Badger Construction Company**, Milwaukee, is shown in operation on West State Street between North 12th and North 17th streets, where work similar to that on South Muskego Avenue is being done. This machine is seen on Milwaukee's streets every summer, for the Badger Construction Company handles quite a bit of the city's street work. The concrete for the curbs on this job is being poured by the **Kolinski Ready-Mixed Concrete Company** of Milwaukee with trucks equipped with concrete mixing bodies or concrete mixers and distributing spouts. The same firm is also handling some of the concrete work on the cross street approaches. The general concrete paving, which is to be a foundation for the later applied asphalt, is being handled by the Badger Construction Company with their new Koehring 27-E Gasoline Concrete Paver.

An artist had hired a new model. He inspected her and then said:

"Listen, young woman, if you want to be an artist's model, you'll have to stop wearing garters. Now take a seat somewhere and wait till the marks from the elastic come off your legs."

She obediently disappeared and some minutes later returned for work. He looked at her and then bellowed in a rage. "Well, by the eternal! If you didn't have to go and sit on the only cane-seated chair we have in the place!"

St. Louis and Vicinity

By A. J. KOENIG

Bids for six road projects in St. Louis County were opened by the Circuit Court. These projects are embraced in the recent $10,000,000 bond issue of St. Louis County. Low bids on three of the projects were submitted by **C. P. O'Reilly Construction Company** of St. Louis. For construction of 2700 feet of gravel road from Oak to Reis Road, $16,660. A bid of $54,202 for draining and grading 19,849 feet on Eatherton Road. The engineers' estimate on the project was $75,943. This company also bid $37,889 for gravel surfacing 12,325 feet on Ballwin Road. **The Independent Quarry & Construction Company** was low on the concrete paving of 18,231 feet of 20-foot slab on Telegraph Road. Their bid was $132,851. **Bangert Bros. Construction Company** with a bid of $30,545 was low on the paving of 6,900 feet of bituminous asphalt on Centaur Road. A low bid of $5,137 submitted by **C. H. Berry** for the concrete paving of 464 feet on Laclede Station Road.

For your convenience in writing to Johnston Brothers, Inc., you will find a card bound in this issue.

Sure-Footed

on wet or rough ground

THE Bucyrus-Monighan Walking Dragline is a determined, quick-moving plodder. Even though rain has fallen for days—or the ground is so rough passage seems impossible — this dragline walks and works without interruption. Bucyrus-Monighan Company, Chicago, Illinois.

BUCYRUS MONIGHAN

Walking Draglines up to 8 cu. yds.

Sold by

BUCYRUS-ERIE CO.
South Milwaukee, Wis.

Representatives throughout the U.S.A. Branch Offices: Boston, New York, Philadelphia, Atlanta, Birmingham, Pittsburgh, Buffalo, Detroit, Chicago, St. Louis, Kansas City, Dallas, San Francisco. Offices or Distributors throughout the world.

B-4

For your convenience in writing to Bucyrus-Erie Co., you will find a card bound in this issue.

Shots From the Firing Line—*Continued*

Attorney General Oscar E. Carlstrom of Illinois held unconstitutional a bill providing for pre-qualification of bidders on public works and providing permits for non-residents or aliens employed on public works.

A contract for sodding approximately 34,100 feet of levee in the Little River Drainage District, about 10 miles southwest of Cape Girardeau, Missouri, was awarded to **R. B. Potashnick** of Cape Girardeau on his bid of $5,000.

The Chicago, Burlington & Quincy Railroad is preparing to lay tracks from East St. Louis to Shattuck, Illinois, to connect with its main north and south tracks at that point. About $4,000,000 will be required to complete the project. At the present time the Burlington is operating over the tracks of the B. & O. R. R. Thirty miles of tracks will be laid.

W. P. McGeorge, Pine Bluff, Arkansas, was awarded contract by the U. S. Engineer at Kansas City, for 14,800 lineal feet standard clump pile dikes and 6,000 feet standard revetment in Missouri River at Weavers and Pomeroy Bends.

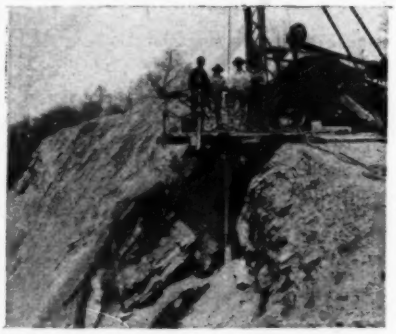
The Board of Public Safety, St. Louis, W. H. Horner, Engineer, will soon ask for bids for the construction of two sewers at approximately $345,000 and the reconstruction and repairing of present sewers at about $1,000,000.

Perry McGlone, Harrisonville, Missouri, has contract for grading 9.17 miles of state road in Platte County, Missouri. This project involves 137,674 cubic yards of earth and 26,000 cubic yards of solid rock; also two bridges. Their bid was $73,047.

A. A. Davis & Co. Inc., of Oklahoma City was low bidder for the paving of 9.15 miles of 20-foot slab on Highway No. 50 in Osage County, Missouri. Their bid was $119,741.

Oklahoma Notes

This picture was furnished us by courtesy of **The Armstrong Driller.** It shows some of the difficulties encountered by **Floyd French**, contracting driller for **Southwest Stone Co.**, Stringtown, Oklahoma, in drilling blast holes in this quarry. The drill is an Armstrong No. 45-BE and the hole was started 18 feet below level where machine sets. The formation is a flinty limestone structure, extremely hard and irregular. The face of the quarry in places is 150 feet high. Mr. French has been successfully handling this difficult drilling job for a number of years. He is shown second from the right in the above picture, with his helper and two tool dressers.



Kansas City and Vicinity

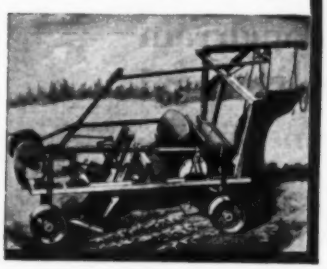
BY THE VICTOR L. PHILLIPS COMPANY

On July the 27th the **Santa Fe Railway Company** will held a letting at Topeka, Kansas and will award $1,500,000.00 worth of work in Oklahoma City. This includes thirteen overpasses and walls on the Santa Fe right-of-way through Oklahoma City.

Woods Brothers, of Lincoln, Nebraska are moving their equipment onto their large bridge job at Guthrie, Oklahoma, and getting a nice start on this work.

The Rucks Brandt Construction Company of Tulsa, was awarded the $400,000.00 bridge in Tulsa. They are getting their equipment together to make a start on this work in the next few days.

SINCE
DITCHING
MACHINES
WORE
CHAINS



WHEN we first made B & B Wire Rope in 1876, plenty of ditching machines and other excavating equipment still wore chains. Gallantly, your industry took a chance on our new, untried products.

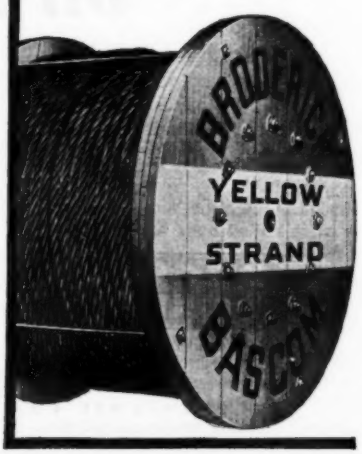
Yellow Strand, the super wire rope, has long since *proved* its stamina, its economy, on great excavating projects from Panama to the Beauharnois Canal, from the Woolworth foundations to those of the Empire Building.

Get Catalog 51

Broderick & Bascom Rope Co.
ST. LOUIS

New York Houston Portland Seattle
FACTORIES: St. Louis and Seattle

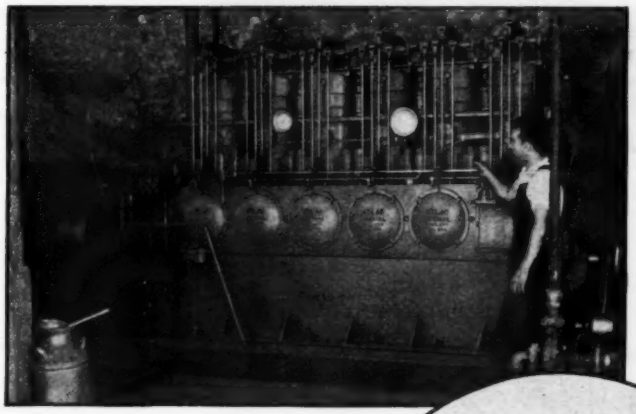
Wire for all B&B Ropes undergoes many important laboratory tests before being laid up into rope.



P7

YELLOW STRAND
WIRE ROPE
MADE OF WIRE DRAWN TO OUR SPECIFICATIONS FROM GENUINE SWEDISH STOCK

CONVERT LOSSES INTO PROFITS



Hoover Dam—One of two Atlas Diesels purchased by Six Companies, Inc., builders of the Dam, for driving Ingersoll-Rand Air Compressors.

Over one hundred thousand Atlas Diesel horsepower is now making profits for users in the construction industry.

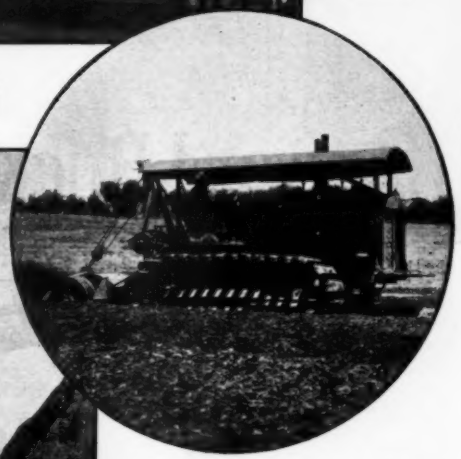
Better than one thousand shovels and draglines have been equipped with Atlas Diesels. Excavators of Bucyrus-Erie, P & H (Harnischfeger), Link-Belt and Thew-Lorain — powered with Atlas Diesels — are in use in practically every country in the world, and operated by native labor.

Thousands of contractors, whose margin between cost and profit had dwindled to a hair's breadth, are now making money, because they investigated and adopted Atlas Diesel Power.

For over ten years the Atlas Imperial Diesel Engine Co. has been pioneering and developing the successful commercial application of the four cycle, common rail, solid injection Diesel Engine to all classes of excavating and dirt moving equipment.

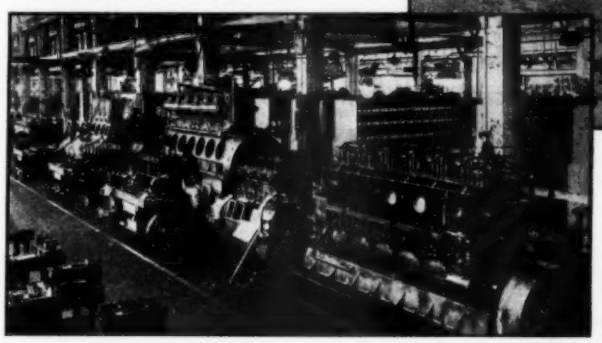
Investigate the greatest power bargain in the construction industry — Atlas Diesel Power. For valuable facts, write to Atlas Imperial Diesel Engine Co., 2867 Glascock St., Oakland, California. Branches and distributors serve the entire world.

Bucyrus-Erie dragline powered with Atlas Diesel. More excavators are powered with Atlas Diesels than with all other diesels combined.



Tractor, converted to Atlas Diesel Power. Used in land leveling. Atlas Diesels have doubled the output of gas tractors, with ¼ to ⅔ the fuel cost.

Portion of one engine assembly line in one of the Atlas factories. Each assembly operation is specialized, and subject to rigid inspection.



THE POWER BARGAIN

for shovels, draglines, air compressors, rock crushers, tractors, industrial locomotives, dredges, oil field service, portable power, marine service.

ATLAS *Diesel Engines*

ATLAS IMPERIAL DIESEL ENGINE CO.

For your convenience in writing to Atlas Imperial Diesel Engine Company you will find a card bound in this issue.

INVESTMENT OPPORTUNITY
for the concern that seeks to bring down excavating costs, a Hayward Bucket is a wise investment. Address the Hayward Co., 52-54 Church St., New York, N.Y.
ward Buckets

Shots From the Firing Line — *Continued*

After a rejection of the first set of bids received the Wichita Sewage Disposal Plant was awarded to M. E. Gillioz of Monett, Missouri. This is one of the largest jobs awarded recently in this territory and will furnish Wichita with a modern sewage disposal plant.

On July the 21st Jackson County Missouri will hold a letting on about twenty miles of slabs, seven bridges, and considerable grading. This work follows the large road building campaign of last summer.

Oregon Notes

By O. B. BJORGE

L. T. RUSSELL

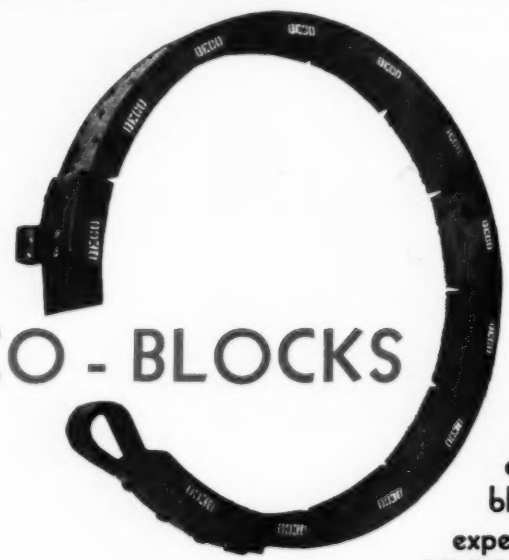
L. T. Russell, well known to the contracting fraternity in the West and Northwest, passed away very suddenly at St. Vincent's Hospital recently and was buried in Portland on June 15th. Mr. Russell had just returned from Honolulu and was at the hospital for treatment of an infection in his foot. He had apparently recovered and was preparing to leave the hospital when he was stricken with heart trouble and passed away instantly. Mr. Russell was at one time, an employee of Bucyrus-Erie Company, having worked in their Chicago Sales Office and later as a representative of that company in the Northwest.

San Francisco and Vicinity

By H. L. LIVINGSTON

The Hauser Construction Company with headquarters at Portland, Oregon and Long Beach, California, has just been awarded contract in excess of one million dollars for the construction of the first unit of a railroad project for the Great Northern Railway Company to run about twelve miles south of Bend, Oregon to Klamath Falls, Oregon.

The Nevada Contracting Company of Fallon, Nevada has been awarded the contract for 6¾ miles of grading in the General Grant-Sequoia Park of California, the amount involved being $208,325.00. This contract involves some 181,000 cubic yards of unclassified excavation.



BECO - BLOCKS

will save money for you because of their smooth operation and long life. They will outlast several sets of wood blocks and thus save time and expense of frequent replacements. BECO - BLOCKS are the most economical and serviceable friction blocks to be had.

Write for full information and send your orders to

BUCYRUS-ERIE COMPANY
Specialty Department
SOUTH MILWAUKEE, WIS. U. S. A.

BUCYRUS ERIE

For your convenience in writing to the advertisers on this page you will find a card bound in this issue.

GEORGE E. FINNELL

We regret to announce the death of Mr. George E. Finnell, President of the contracting firm of Finnell & Company of Sacramento, California. Mr. Finnell was one of California's leading highway contractors. He was killed when his car skidded and overturned while returning to Sacramento from a business trip to San Francisco.

ROBERT CHAMBERLAIN

We also regret to announce the death of Mr. Robert Chamberlain, a well known San Francisco contractor and a member of the firm of McClure & Chamberlain. Mr. Chamberlain was killed at the war Memorial Building in San Francisco when one of his concrete trucks knocked him down and ran over him.

Jack Boyd, Operator, has just returned from Fort Bragg, California, where he has been operating a Bucyrus-Erie Gas + Air shovel for Mendocino County. Jack lost the first joint on the index finger of his right hand through an accident on this job, but it has healed nicely, and he now states that he is all prepared to go out and "have at it" again.

Glenn Royer and Frank Martin, operators, have been frequent visitors at the local office, having just returned from Venezuela where they spent over a year with the Martin Engineering Co. While on this job they operated a number of Ruston-Bucyrus machines and also some Bucyrus-Erie 1030 machines and have expressed a desire to get out on this type of equipment again.

H. Simon dropped in a couple of days ago to tell us that outside of a few broken hoisting cables, his Bucyrus-Erie Gas + Air shovel has given him uninterrupted service on a two-shift basis for the last four months. He states that this machine has maintained a constant average of 1100 yards per eight-hour shift, which he claims is real dirt-moving.

Bids for a number of large dirt-moving jobs will be opened within the next three weeks and we believe that this will mean a revival of business in the contracting line in both Northern and Southern California.

Eliminating a tunnel, originally planned, is effected by this 111-foot cut which **R. G. LeTourneau, Inc.**, is making for the Western Pacific-Great Northern link in Northern California. The Northwest shovel is kept busy loading to a fleet of chariots, of Mr. Le Tourneau's own manufacture, and trucks. Caterpillar "Sixties" are used with the chariots.

MEETING PLACE OF CAPITAL AND LABOR

THE KOENIG LABOR AGENCIES

Established 1875

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KANSAS CITY
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HELP OF ALL KINDS FURNISHED FREE

AMERICAN STEEL & WIRE COMPANY WIRE ROPE

SO important is wire rope to industry—on excavating machines—on hoists—on elevators—and for a thousand and one purposes—that its users can afford only to specify a brand of proved dependability, economy and long life. Because of its outstanding records—and the known reliability of its maker—American Steel & Wire Company American Wire Rope will be found on most equipment where service requirements are severe.

Made by the Largest Wire Rope Manufacturer in the World

The illustration shows American Wire Rope in use on the world's largest electric shovel.

1831 1931

COMMEMORATING 100 YEARS of PROGRESS IN WIRE MAKING

AMERICAN STEEL & WIRE COMPANY

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

208 South La Salle Street, Chicago — And All Principal Cities

Pacific Coast Distributors: Columbia Steel Company, Russ Building, San Francisco

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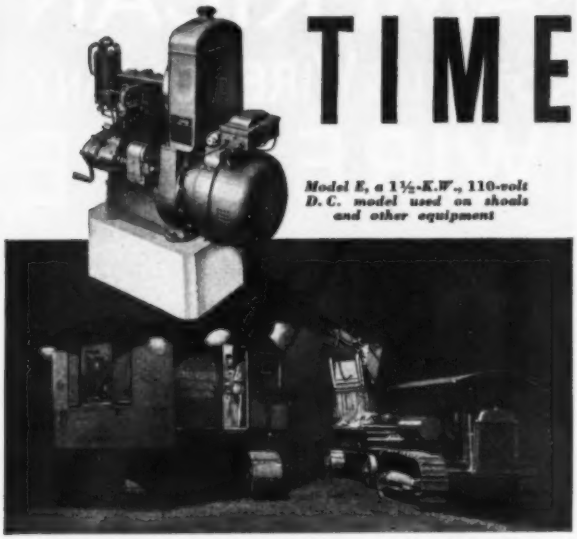
PICKING UP TIME



Model E, a 1½-K.W., 110-volt D.C. model used on shovels and other equipment

Equipped with Kohler Plants, the job goes on through the night

THE time element plays an important part in carrying out large earth-moving or construction contracts. To meet the time schedule, or to beat it, is the first thought in the mind of every contractor interested in profits.

That is why so many rely on Kohler Electric Plants. Whether it is to pick up time after a slow start — to beat handicaps of bad weather and unexpected fills — or to get maximum returns out of expensive machinery investments — the contractor using Kohler Plants for lighting up night jobs is at a decided advantage. With extra crews and Kohler Light he can get 24 hours of good work out of every day.

Wherever there is an outdoor job and public electricity is not practical, there a Kohler Plant will provide economical electric current for bright, steady light and for small power-tools. These plants generate current at 110 or 220 volts A. C. or D. C. Gasoline serves as fuel. Capacities range from 800 watts to 10 K. W.

Kohler units are compact and easily moved. They take up little space on machines. For shovels, draglines, dredges, ditchers, pavers or any other construction machinery—you will find a Kohler Plant highly efficient — and highly profitable.

Send the coupon for detailed information specialized to your needs. Kohler Co. *Founded* 1873. Kohler, Wis.—*Shipping Point,* Sheboygan, Wis.—*Branches in principal cities.* . . . Manufacturers of Kohler Plumbing Fixtures.

KOHLER OF KOHLER ELECTRIC PLANTS

KOHLER CO., Kohler, Wisconsin
Gentlemen: Please send catalog describing Kohler Electric Plants.

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*Street*_____

*City*_____ *State*_____

*Use in which interested*_____

Shots From the Firing Line — *Continued*

Washington Notes

BY E. L. BOOTH

Goodfellow Brothers, Inc., contracting firm of Wenatchee, are using one D-2 and one E-2 Bucyrus-Erie Diesel shovels on a State Highway project at Vantage Ferry. This job calls for the straightening and widening of a road that used to wind along the cliff which looks down on the Columbia River. It is a 450,000 yard job, 60% of which will be rock. Plans call for the completion of the work by September 15.

Halleran Brothers of Seattle, are using a Bucyrus-Erie 30-B Diesel shovel for excavation in connection with highway work at Olalla, Washington.

Superior Portland Cement Company, Inc., has leased the plant and equipment of the Pacific Coast Cement Company, which places another 50-B electric quarry shovel under their operation. The Superior Portland Cement plant at Concrete has been furnished one 120-B electric shovel, one 50-B electric shovel and one 30-B electric crane. The 50-B electric shovel which has been turned over to them on the terms of the lease is operating at View Cove, Dall Island, Alaska.

Eko and Sanders, a new firm composed of men experienced in excavating and contracting work are using a Bucyrus-Erie D-2 Diesel shovel on their State Highway work near Rochester in central western Washington.

State of Washington, Highway Department, is using a Bucyrus-Erie type 1020 gasoline shovel near Tanner, and also operating a 20-B Diesel shovel on Blewitt Pass.

L. F. James reports that he has just completed his contract under **Myers and Goulter** near Ellensburg. Mr. James has moved approximately 200,000 yards of material to complete two sub-contracts and states that on the last unit of work, the shovel was on the job for 180 shifts, approximately 15 of which were spent either with the entire crew on the bank or laid off because of rain. However, without counting these 15 shifts out and taking a straight average, his 20-B averaged 600 yards of excavation per 8 hour shift. This gives Mr. James considerable backing for his statement that his son, Fred James, who has been operating the machine is one of the best shovel engineers in the territory.

Rumsey and Company of Seattle, successors to Rumsey and Jordan are operating GA-2 shovel on the Federal Road project above Fairfax, in Rainier National Park. A new GA-3 Bucyrus- Erie has been ordered and is being shipped to this job and with these two machines on the work, it is hoped that the job will be completed this fall.

East Side Contracting Company, Mr. B. N. Stone, is using a Gas+Air shovel on county road work in Whatcom County near Bellingham.

R. J. Odman, Seattle contractor, was recently awarded a large contract for excavation in the city and is using his Gas+Air Bucyrus-Erie shovel on this work.

HUG

Roadbuilder Trucks
with Front Spring Rocker

Built to Meet a condition

THE HUG COMPANY, Highland, Illinois

This unit will "*lick*" your hauling problems!

Here is an attachable unit for your trucks that will "lick" that bad road job . . . it will mean increased yardage on the toughest jobs . . . and increased yardage means more profits.

Installed on your truck chassis in two hours, and operating under every conceivable condition, the CENTIPEDE truck unit will haul from 10 to 20 tons in a single load.

The CENTIPEDE truck unit permits operation in swamp land, in sand or rough rolling country and up steep grades. No conditions present a problem to the CENTIPEDE equipped truck.

Let us tell you more about this proven unit . . . call or write.

CENTIPEDE TRUCK UNIT

Distributed by **Warfield Gilliland Development Co.,**
Coliseum Building, Minneapolis, Minn.

Manufactured By the Iron Products Corporation of LaCrosse, Wisconsin

For your convenience in writing to Warfield Gilliland Development Co., you will find a card bound in this issue.

TRADE NOTES

The Blaw-Knox Company, of Pittsburgh, Pa., has acquired the exclusive sales and manufacturing right of the Ateco line of earth moving machinery from the **American Tractor and Equipment Company**, of Oakland, California, for the United States east of the Rocky Mountains and for all other countries. The line includes hydraulically operated earth movers, bulldozers, scarifiers, tamping rollers and combination outfits.

The S. G. Taylor Chain Company with general offices and works at **Hammond, Indiana**, during the month of June started their 59th year in the business of producing quality welded chain and fittings. Mr. S. G. Taylor, Jr., son of the founder of this company, has been the active head for more than thirty-five years, and his son Mr. E. Winthrop Taylor is a Vice-President at this time. The S. G. Taylor Chain Company makes a complete line of electric welded, fire welded and hand welded chain, using the most modern up-to-date equipment.

Stephens-Adamson Manufacturing Company of Aurora, Illinois, announce the appointment of C. H. Adamson, secretary of the firm, in direct charge of sales and engineering for the Chicago territory. The engineering personnel has been increased and the offices have been moved to new quarters in the Civic Opera Building at 20 North Wacker Drive.

POSITIONS WANTED

Space under this heading is available at $5.50 per inch or fraction thereof.

Address all box numbers c/o The Excavating Engineer at South Milwaukee, Wisconsin

DRAGLINE-CRANE-SHOVEL OPERATOR

10 years' experience on Gas+Air, gasoline and steam draglines, cranes and shovels. Above experience includes years spent on highway grading, basement excavation, drainage and coal stripping work. Prefer operating a Bucyrus-Erie shovel anywhere in country. Can do own repair work. A-1 references furnished. Single. Present location, Pennsylvania. Box 1705.

DREDGING SUPERINTENDENT

Qualified to take full charge of dredging operations. 20 years' experience on drainage and levee work. Willing to go anywhere in U. S. A. Can do own repairing and furnish reliable references. Located in Minnesota. Box 1707.

CLAMSHELL-SHOVEL OPERATOR

23 years' experience on steam and gasoline machines. Experience covers years operating on all makes of machines on highway and railroad grading, quarry loading, over burdens stripping. Willing to go anywhere in U. S. A. Excellent recommendations furnished. Can do own repair work. Present location, Pennsylvania. Box 1708.

POWDER MAN AND ROCK FOREMAN

10 years' experience in handling explosives, shaft or tunnel work, licensed to go anywhere. Can use Cordeau. A-1 references. Box 1709.

STEAM SHOVEL OPERATOR

17 years' experience on all types of highway and railroad grading and coal stripping. Have operated all types of steam machines. Can do own repair work and also furnish reliable references. Willing to go anywhere. Present location, Alabama. Box 1710.

DRAGLINE-SHOVEL OPERATOR

Can operate steam, Diesel, or gasoline shovels, clamshells and draglines. Steady employment biggest consideration. Have had lots of rock work. Can furnish excellent references. Present location, Minnesota. Box 1711.

SHOVEL OPERATOR

18 years' experience on Bucyrus-Erie electric and steam machines on grading, stripping and loading work. Can do own repair work and furnish reliable references. Willing to go anywhere. Present location, Kentucky. Box 1712.

SHOVEL OPERATOR

Electric shovel operator can lay out work and repair on shovel. Will go anywhere in U. S. A. on stripping operations or railroad work. Excellent references furnished. Present location, Iowa. Box 1706.

CLAMSHELL CRANE SHOVEL OPERATOR

13 years' experience on gasoline and steam machines on highway, basement and general excavating. Available for work anywhere in U. S. A. Married. Can do own repairing and furnish excellent references. Present location, Ohio. Box 1701.

CLAMSHELL-SHOVEL OPERATOR

Have operated Gas+Air, gasoline and steam shovels for 18 years on highway and railroad grading and on pipe line work. Willing to go anywhere on any type machine. Can furnish A-1 references and can do own repair work. Married. Present location, New Jersey. Box 1702.

CLAMSHELL-CRANE-SHOVEL OPERATOR

23 years operating gasoline, electric and steam clamshells, cranes and shovels. Fully experienced on railroad and highway grading and quarry work. Willing to go anywhere and on any type of job. Excellent repairman. Married and A-1 references. Present location, Illinois. Box 1703.

SHOVEL OPERATOR-DREDGE ENGINEER

Experience includes 17 years on coal stripping, highway grading, quarry work and dredge operating. Prefer shovel work in Central States but will consider any reasonable offer anywhere in country. Can do own repairing and can furnish reliable references. Married. Present location, Ohio. Box 1704.

FOR SALE

Space under this heading is available at the following rates, payable in advance of publication:

1 to 3 inches	$5.50 an inch net
Over 3 to 7 inches	5.25 an inch net
Over 7 inches	5.00 an inch net

An inch is measured vertically on one column—three columns to a page. Any space may be used measured by the even inch in height and by one, two or three columns in width.

The price per inch is based on total space used—multiply ad. space by number of continuous insertions.

Address all box numbers c/o The Excavating Engineer at South Milwaukee, Wisconsin

Small Shovels

Under 2 yards

TYPE B ERIE SHOVEL: Shop number near 2025, caterpillar mounted, 19-foot 8-inch boom, 16-foot handle, ¾-cubic-yard dipper. Machine in first-class condition, located northwestern Texas. Priced to sell. Box 198-SS.

NORTHWEST MODEL 104—45-foot boom Dragline (no bucket). Equipped Twin City 4 cylinder, 7¼-inch x 9-inch Engine. "Cats" 14-feet 8-inches long by 10-feet wide. Especially built for Dragline service. Located Indiana. Price $5500.00. Box 220-SS.

ONE 18-B BUCYRUS, ⅞-yard dipper on full revolving caterpillars. Box 182-SS.

P&H MODEL 600. New 1929. 20-foot shovel boom, 14-foot 3-inch Dipper handle, 1-yard Dipper. Also 40-foot boom Clamshell-Dragline Equipment. Waukesha 75 H.P. Engine. Located Arkansas. Price subject purchaser's inspection, f.o.b. present location $6500.00. Box 218-SS.

BRAND NEW BUCYRUS-ERIE GA-2 SHOVEL. 22-foot 6-inch boom, 16-foot Dipper Handle, 1¼-cubic-yard Inserted Tooth Dipper, 6¼-inch x 8-inch Waukesha Engine, Air-cooled Compressor, Air Starter. Machines used for demonstration purposes only. Carries full new machine guarantee. Box 219-SS.

UNIVERSAL SHOVEL—New September 1929—equipped Framall McCormick-Deering, 4 cylinder 3-3/4 x 5-inch Engine, 15-foot Boom, 10-foot Dipper Handle, ⅜-yard Plate Dipper. ⅝ swing. Full crawler mounted. Good operating condition. Located vicinity Duluth. Price f. o. b. present location $1900.00. (Includes 4 wheel single axle Trailer.) Box 221-SS.

BUCYRUS-ERIE B-2 HIGH LIFT SHOVEL, Shop number above 10,000. New style "Cats," Cab armored two sides and rear. Roof reinforced. Has been thoroughly reconditioned. Located vicinity Louisville, Kentucky. Price f. o. b. cars present location $7500.00. Box 223-SS.

BUCYRUS-ERIE 1020 Gasoline ½-cubic-yard, Chain Crowd Shovel, "Cat" Mounted. Used about six months. Located Kansas City. First class condition. Box 216-SS.

BUCYRUS 30-B DIESEL Shovel No. 4008, 25-foot 9-inch Boom, 14-foot Dipper Handle, one-yard Dipper. Located vicinity Dallas, Texas. Good operating condition. Price $3000.00. Box 217-SS.

WILFORD (UNIVERSAL) 25-foot Boom Dragline including ¼-yard Dragline Bucket. Half swing. "Cat" mounted. Good condition. Located western Nebraska. Price $850.00. Box 222-SS.